CLEAR-COM ECLIPSE

ICS-2003 INTERCOM PANEL

INSTRUCTION MANUAL

ICS-2003 Intercom Panel Instruction Manual

Part Number 810303Z Rev. 4

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IMPORTANT SAFETY INSTRUCTIONS

Please read and follow these instructions before operating an ICS-2003 intercom panel.

For your safety, it is important to read and follow these instructions before operating an ICS-2003 intercom panel:

(1) WARNING: To reduce the risk of fire or electric shock, do not expose an ICS-2003 intercom panel to rain or moisture. Do not operate an ICS-2003 intercom panel near water, or place objects containing liquid on it. Do not expose an ICS-2003 intercom panel to splashing or dripping water.

(2) For proper ventilation, make sure ventilation openings are not blocked. Install the ICS-2003 according to the directions in the Installation Chapter of this manual.

(3) Do not install an ICS-2003 intercom panel near a heat source such as a radiator, heat register, stove, or other apparatus (including amplifiers) that produces heat. Do not place naked flame sources such as candles on or near an ICS-2003.

(4) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades, with one blade wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

(5) Protect the power plug from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the ICS-2003 chassis.

(6) Only use attachments/accessories specified by Clear-Com Communication Systems.

(7) Unplug the ICS-2003 panel during lightning storms or when unused for long periods of time.

(8) Refer all servicing to qualified service personnel. Servicing is required when:

- The ICS-2003 panel has been damaged in any way, such as when a power-supply cord or plug is damaged.
- Liquid has been spilled or objects have fallen into the ICS-2003 panel's chassis.
- The ICS-2003 panel has been exposed to rain or moisture.
- The ICS-2003 panel does not operate normally.
- The ICS-2003 panel has been dropped.

Please familiarize yourself with the safety symbols in Figure 1. When you see these symbols on an ICS-2003 intercom panel, they warn you of the potential danger of electric shock if the panel is used improperly.

They also refer you to important operating and maintenance instructions in the manual.

This symbol alerts you to the presence of uninsulated dangerous voltage within the product's enclosure that might be of sufficient magnitude to constitute a risk of electric shock. Do not open the product's case.

This symbol informs you that important operating and maintenance instructions are included in the literature accompanying this product.

Figure ii-1: Safety Symbols

OPERATION

INTRODUCTION

This chapter describes how to operate an ICS-2003 display intercom panel and its digital equivalent, the ICS-2003T. Panel operators can use this manual after the Eclipse System has been correctly installed and configured.

This chapter describes how to operate an ICS-2003 display intercom panel, and how to operate its digital equivalent, the ICS-2003T.

DESCRIPTION

ICS-2003/ICS-2003T DISPLAY PANEL

The ICS-2003/2003T intercom panel is assembled in a small, 2-RU high (2.5 in. or 6.35 cm) chassis with 12 selectors. The panel has the following features:

- Individually adjustable listen levels
- A 60 x 480 pixel EL display
- Local panel configuration menus and functions
- Visible, assignable answer-back stack
- Swap window (provides additional 12 selector assignments)
- Built-in speaker and optional plug-in panel microphone
- Front-panel headset connector
- Call signaling ability
- “Answer Back” facility
- Local program input and volume control
- Programmable relay
- Mute relay
- Two logic inputs for external control of selected panel functions
- Page override support

PANEL OPTIONS

The ICS-2003/2003T can be equipped with the following options:

- OPT-100 Auxiliary Audio Output
- XP-12/22 or XPL-12/22 Expansion Panels

FRONT-PANEL CONTROLS AND INDICATORS

This section describes the front-panel controls and indicators. These include:

• The display screen

• Intercom and program controls

• Talk/listen selectors and indicators

• “Answer Back” facility

• Keypad buttons

Figure 1-2 illustrates the ICS-2003/ICS-2003T front-panel controls and indicators.

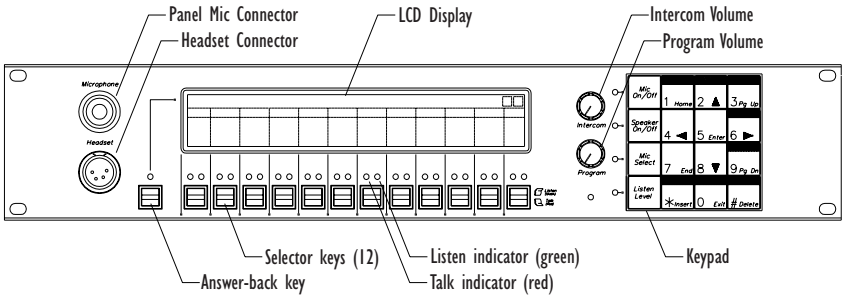

Figure 1-2: ICS-2003 Front-Panel Controls and Indicators

Display Screen

The display screen is divided into five areas, or windows. These include the talk, listen, answer-back, message, and symbol areas/windows.

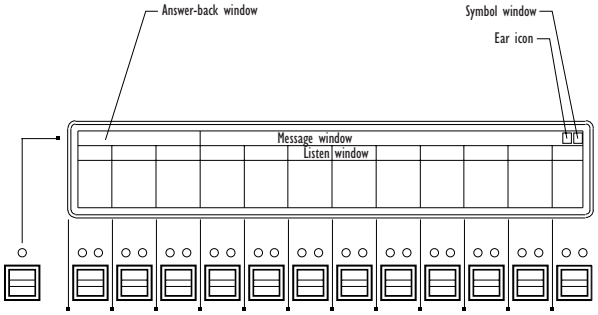

Figure 1-3: ICS- 2003 Display Screen

Talk Window

The talk window is located directly above the selectors, and shows the currently assigned labels. Assigned labels are accessed when the selector is pushed or latched in the “talk” position (down). Each selector can be assigned as many as four labels. Each label can

represent a talk path to a panel, interface, fixed group, or party line, or can activate a programmable control function.

Listen Window

The listen window is located directly above the talk window. It contains one listen label per selector. Labels refer to the listen paths that are established when the selector is pushed up.

Answer-Back Window

The answer-back window is located above the “Answer Back” selector. It displays a list of as many as five incoming calls. The first caller’s label is closest to the “Answer Back” selector and is highlighted. Subsequent calls are placed to the right of the first in the window. This list is called the answer-back stack.

Message Window

The message window displays panel status and error messages.

Symbol Window

The symbol window displays two graphic symbols. The functions of the two symbols are as follows:

- Ear symbol—indicates when someone is listening to (monitoring) the panel.
- Window-indication symbol—displays a W (for window) and a Roman numeral I or II to indicate which talk/listen window is active, as toggled by the “Swap” button (See “Swap Button (9)” on page 14.).

Non-Displaying Characters

Certain Latin characters that may be present in a label will not be displayed on the ICS-2003 display screen and will be replaced by spaces. These characters are:

- ` (grave) is displayed as a space
- | (bar) is displayed as a space
- _ (underscore) is displayed as a space
- ~ (asciitilde) is displayed as a space
- { (braceleft) is displayed as a space
- } (braceright) is displayed as a space
- ¬ (logicalnot) is displayed as a space

Users should avoid the use of these characters in labels that may be configured on ICS-2003 panels as the replacement of the characters with spaces could cause operator errors.

Communication-Error Indicator

If the panel should lose data communication with the matrix frame:

- It will display the message “WAITING FOR ECLIPSE CONNECTION.”
- All of the red LEDs will flash slowly.

When data communication is restored, the panel will automatically return to normal operation.

Speaker/Headset Level Controls

To adjust the speaker or headset volume, use the “Intercom” and “Program” volume controls. The speaker volume can also be affected by three software-controlled functions: Page Override, Mute Level, and Listen Level Adjustment.

Intercom Volume

The “Intercom” volume control sets the overall level of all signals coming from the matrix frame.

Program Volume

The “Program” volume control adjusts the volume of the signal coming into the panel through the auxiliary input of the “Miscellaneous” rear-panel connector.

Page Override

Page override is a special function in the panel in which the intercom volume defaults to a preset to a value when commanded to by the central matrix. Any fixed group can be assigned the page-override function through the configuration program.
The configuration program determines preset value for each panel. If the preset value is lower than the setting of the front-panel volume control, the volume will be controlled by the front-panel control.

Mute Level

This turns down the speaker level when any talk is active at the panel. The amount of muting (measured in dB) is set by the configuration program for each panel. This function helps prevent possible feedback. The maximum amount of muting is 15 dB below full volume. If the front panel control is set below that level, then muting will have no effect.

Listen Level Adjustment

The level of any active listen path can be adjusted individually. Refer to “Listen-Level Mode” on page 8.

Headset Connector

The headset connector provides a front-panel connection for a headset. Plugging in a headset will initially cause the panel to switch to headset-microphone operation and will turn the speaker off. Unplugging the headset will cause the panel to switch to panel-microphone operation and will turn the speaker on.

Talk/Listen Selectors and Indicators

The following section describes the operation of the talk/listen selectors and their associated indicators.

Selector Operation

The selectors operate as both talk and listen selectors; they also work as volume controls when the panel is in listen-level mode (see “Listen-Level Mode” on page 8). Pressing a selector down accesses a talk label; pushing it up accesses a listen label. Pushing the talk selector down and quickly releasing it will “latch” the selector and the talk path will stay active until it is pressed again. Pressing and holding a talk selector causes the talk path to stay active only for as long as it is held down. Listen selectors operate in the same manner.

To prevent the selector on the panel from latching in the talk position (local latch disable), or to prevent any panel from latching a talk to the panel (global latch disable) use the configuration program.

Talk and Listen Indicators

When a talk path is active, the selector’s red LED lights continuously. When a listen path is active, the selector’s green LED lights continuously.

Monitoring/Eavesdropping Indicators

If any other panel begins monitoring a panel a beep (the monitoring-alert tone) will sound at the panel.

To inhibit the monitoring-alert tone, use the configuration program.

Call-Waiting Indicator

If a panel calls another panel with a selector programmed with the caller’s label, the red LED will flash rapidly. This flashing is a call-waiting tally. To answer the incoming call, push the indicated talk selector. The call-waiting tally will be cleared when the call is answered or after the call is terminated and the answer-back, auto-clear time out lapses.

Regardless of whether a selection is programmed with a caller’s label, the label will be placed in the answer-back stack (see “Removing Labels from the Answer-Back Stack” on page 7).

In-Use Tally Indicator

If a selector is assigned to a label and another panel is currently using that label, the LED will double-flash once per second to indicate the label is in use. This tally must be enabled from the configuration software.

Telephone Off-Hook Tally Indicator

When a telephone interface is assigned to a talk selector, the talk LED will flash once per second if that telephone is off the hook. This tally must be enabled from the configuration program.

Radio Receiver Active Tally Indicator

When a two-way radio interface port is assigned to a talk selector, the LED will flash once per second when that radio's receiver is active. This tally must be enabled from the configuration program.

Panel Connected Tally Indicator

This tally is used when a panel is connected to the frame by a high-speed data line (such as an ISDN or T1 line) that might be inactive periodically. The red LED of any talk selector associated with that panel will flash once per second when the panel is on-line. This tally must be enabled from the configuration program.

Audio Presence Tally Indicator

When a label is assigned to a listen selector, the LED will flash once per second to indicate someone is talking on that channel. This tally must be enabled from the configuration program.

Answer-Back Facility

The primary function of answer-back facility is to answer or call other panels or interfaces not assigned to a panel's selectors. Panels and interfaces that are assigned to a panel's selectors also can be answered or called with the answer-back facility.
The following sections describe the use of the answer-back facility.

Answer-Back Window

The answer-back window is located above the "Answer Back" selector. It displays a list of as many as five incoming calls. The first caller's label is closest to the "Answer Back" selector and is highlighted. Subsequent calls are placed to the right of the first in the window. This list is called the answer-back stack.

Answer-Back Selector

The "Answer Back" selector answers calls from panels and interfaces that are both assigned and unassigned to the panel.
When a call arrives from a panel or interface:

- The calling panel's label will be placed in the answer-back stack and be highlighted in the answer-back window.
- The red LED will flash.

These two conditions will continue until the call is answered, or until the answer-back time-out period lapses and the caller's label is automatically removed. To answer the call, push the "Answer Back" selector. The LED will stay on steady, indicating an active talk path to the caller. The talk path is active for as long as the selector is held.

Note: The "Answer Back" selector cannot be latched; it is a momentary-only function.

Calls from panels or interfaces assigned to panel selectors will also be indicated by their associated LEDs.

Answer-Back Label Selection

If another call or calls comes in while using the answer-back selector:

- The user will hear the caller's voice
- The label will be placed in the answer-back stack.

To answer the next caller:

1. Push up on the "Answer Back" selector to highlight the desired label in the answer-back stack.
2. Once the desired label is highlighted, press the selector down to talk.

Removing Labels from the Answer-Back Stack

Any label will be automatically removed from the stack if it is not answered within a certain time interval, which is set by the answer-back auto-clear time in the configuration program.
To manually remove the current caller's label from the answer-back stack, push up on the "Answer Back" selector.

Calling an Unassigned Panel

To call a destination in the answer-back stack:

1. Push up on the "Answer Back" selector to highlight the desired label in the answer-back stack.
2. Once the desired label is highlighted, press the selector down to talk.

Keypad: Single-Function Buttons

The first column of buttons on the keypad consists of:

- "Mic On/Off"
- "Speaker On/Off"
- "Mic Select"
- "Listen Level"

Mic On/Off Button

This button activates the panel or headset microphone, whichever has been selected. The LED indicates when the microphone is on. If a talk is activated while the microphone is off, it will turn on for the duration of the call.

Speaker On/Off Button

This button functions only when a headset is plugged into the panel. To toggle the speaker on and off, push the "Speaker On/Off" button. The LED indicates when the speaker is on.

Mic Select Button

This button selects the panel or headset microphone. If a headset is plugged in, the panel will automatically switch to headset microphone operation. If the headset is unplugged, the panel will automatically switch back to panel microphone operation. The LED to will be on when the panel microphone is active.

Listen Level Button

The Listen Level button has four functions:

- Activating the listen-level mode
- Resetting the listen-level settings
- Sending call signals
- Releasing auto-answered telephone lines

Listen-Level Mode

To use the listen-level adjust mode:

1. Push (for less than 1 second) and quickly release the “Listen Level” button.
2. “Listen Level Adjust Mode” will appear in the message window to indicate the function is on and the LEDs of all active listen selectors will begin to flash.

Note: Only active selectors can be adjusted in listen-level mode.

3. Use the selector associated with the intended label to increase (up) or decrease (down) the volume.
4. To exit, push the “Listen Level” button or wait for the 3 second time-out.

Listen Level Reset

To reset the Listen Level to default settings:

1. Press (for less than 1 second) and quickly release the “Listen Level” button.
2. Press and hold the “Listen Level” button for 3 seconds.
3. Release the “Listen Level” button.

Call Signals

To activate a call signal push and hold (for at least 1 second) the “Listen Level” button until the panel indicates it is in “Call Signal” mode. The call signal will be sent each time the selector with that label assignment is pushed down and will remain so until the call-signal mode times out (about 5 seconds).

Call signals can be issued to any talk label assigned to a panel’s talk/listen selectors. If more than one label is assigned to a selector, all labels will receive the signal. If a label is a fixed group, the entire group will receive the call signal. If the label is a party line, then every panel listening on the party line will receive the call signal.

Remote Telephone Line Release

This function is available only if specifically enabled in the configuration program. To hang up a TEL-14 telephone interface left off the hook:

1. Push and hold the “Listen Level” button on the ICS-2003.
2. The CALL SIGNAL: message should be displayed.
3. Wait for approximately 2 seconds after the CALL SIGNAL: message appears on the display.
4. While holding the “Listen Level” button, press a talk selector for the desired telephone interface.
5. Release the “Listen Level” button.

Note: In addition to hanging up the telephone interface, this will deactivate any talk/listen selector set to the interface from anywhere in the system.

Keypad: Administrative Buttons

The upper portions of 5 of the 12 buttons are labeled with the function active during normal panel operation; these functions are:

- (3) “Menu”
- (5) “Display Listen” Labels
- (9) “Swap” window
- (*) “Dial” phone
- (#) “SA” (studio/stage announce)

Menu Button (3)

The “Menu” (3) button on the keypad accesses the Information, Local Configuration, System Configuration, and Maintenance menus. Pressing the “Menu”(3) button also displays the panel’s port number and label.

To access the menus:

1. Push the “Menu” (3) button.
2. Use the selectors and keypad as indicated to select the appropriate menu.

If another panel calls while in a menu, that panel’s label will be added to the answer-back stack and the operator’s voice will be heard. To respond, push the “Answer Back” selector.

Information Menu

The Information menu allows viewing, but not modifying, the following items:

- View Party Line Members
- View Fixed Group Members
- View Monitoring List
- View Forced Listens

• View Nearby Panels

View Party Line Members

This function displays interfaces preset to a party line. Use the cursor buttons or selectors to select the desired party line.

View Fixed Group Members

This function displays panels and interfaces in each fixed group. Use the cursor buttons or selectors to select the desired fixed group.

View Monitoring List

This function displays all panels monitoring the panel. An ear symbol in the symbol window indicates monitoring of the panel.

View Forced Listens

This function displays destinations or sources of forced listens. Use the selectors to select Destinations or Sources.
Viewing Destinations displays all panels or interfaces always connected to the panel's out-going audio. Viewing Sources displays all panels or interfaces always connected to the panel's incoming audio.

View Nearby Panels

This function displays all the labels set for nearby panels. This means that two panels are within hearing distance of each other and that an audio path between the panels can result in an audio feedback loop. Audio paths to panels designated as nearby panels cannot be established.

Local Configuration Menu

Selecting the Local Configuration menu allows modifying the following items:

• Answer Back Time-Out

• Internal Level Adjust

• Display Brightness

Answerback Time-out

This menu increases, decreases, or disables the time period a caller's label will remain in the answer-back window. The time period is adjustable from 10 to 60 seconds in 10 second increments; the default period is 10 seconds. Use the selectors to change the time-out period.

Internal Level Adjust

This menu changes the panel microphone, the headset microphone, and the headset sidetone gain. Use the selectors to raise or lower the gain.

Display Brightness

This menu adjusts the brightness of the panel's display. Use the cursor buttons or selectors to adjust the brightness.

Warning: All panel key reassignments take place immediately upon exiting this function. Active talk and listen paths will be disconnected when their labels are removed.

System Configuration Menu

The System Configuration menu changes some of the Eclipse System configuration parameters typically only available through the configuration program. These are:

- Assign Party Line Members
- Assign Fixed Group Members
- Assign Panel Keys
- Assign Forced Listens
- Change Input Level Gains

Assign Party Line Members

To add or remove an interface from a party line:

1. Choose the appropriate interface label category.
2. Choose an interface label.
3. A list of available party lines will be displayed. If the label is currently part of any displayed party line, that party line(s) will be outlined. Add or delete the label from a displayed party line by selecting it and pressing Enter.

Assign Fixed Group Assignments

To add or remove panels or interfaces from fixed groups:

1. Choose the appropriate interface label category.
2. Choose an interface label.
3. A list of available fixed groups will be displayed. If the label is currently part of any displayed fixed group, that fixed group(s) will be outlined. Add or delete the label from a displayed fixed group by selecting it and pressing Enter.

Assign Panel Keys

To change the talk and listen selector labels on any panel in the system, including the selectors on accessory panels:

1. Choose a panel.
2. Choose the selector to be assigned.

   Note: It may be necessary to select a talk/listen window or expansion panel if the selector to be assigned isn't visible. Use the Pg Up and Pg Dn buttons for this.
3. Press the Enter button to display all labels available for assignment.
4. Select the desired label.

   To select between talk keys, listen keys, and combo keys: Some panels support keys which may be talk, or listen, or talk with listen, sometimes called combo keys. To change between these assignments on these panels use the keypad keys "2" or "up" and "8" or "down." If the selected key is shown on the top line of the

display, pressing the “up” key will change the key assignment from talk to listen, from listen to talk with listen, and from talk with listen to talk. If the selected key is on the lower line pressing the “down” key does the same. The active assignment is shown in the center of the screen at the top of the display, a “T” is displayed for a talk assignment, an “L” for a listen assignment, and “T+L” for a talk-with-listen assignment.

5. Exit to save changes or abort to abandon the changes.

Warning: All panel selector reassignments take place immediately upon exiting this function. Active talk and listen paths will be disconnected when their labels are removed.

Assign Forced Listens

To add or remove forced listens:

1. Select “select source -> assign destinations” to choose a single source and assign it to multiple destinations. Select “select destination -> assign sources” to choose a single destination and assign multiple sources to it.
2. Choose a panel or interface label.
3. A list of destination or source labels will be displayed depending upon the assignment method selected. If the label(s) is already assigned to the selected label, that label will be outlined. To change a label’s assignment status, select the label and press Enter.

Change Input Level Gain

This menu adjusts the level of the audio signal sent to the frame. Use the selectors to raise or lower the gain.

Panel Upgrade Facility

If a panel firmware upgrade is downloaded to the matrix by ECS with the “Panel Prompt” option set the panel user will be asked whether the firmware upgrade should be applied. The panel will display the message “UPGRD TO VER nnnnn YES NO” on the display, with each word as a label (nnnnn is the version number). The panel keys will flash indicating an upgrade is available. This prompt will be displayed when the upgrade is available if the panel is online, or when the panel goes online if it is offline when the upgrade is downloaded to the matrix.

The panel operator can decline the upgrade by pressing the “NO” key after which the panel will return to the normal display. If the upgrade is declined it will not be offered again until a black reset is performed on the matrix.

If the panel user pressed the “YES” key a confirmation request is display on the panel. The confirmation display is “ARE YOU SURE nnnnn YES NO”. If the user selects the “NO” key the upgrade will be cancelled and will not be offered again until a black reset is performed on the matrix.

If the user selects the “YES” key the firmware upgrade will be applied to the panel. The message “UPDATE IN PROGRESS” will be dispayed while the panel is updating.

MAINTENANCE MENU

The Maintenance menu provides functions for technical personnel. For information on the use of these functions, see the *Maintenance* chapter.

Listens Button (5)

Although not marked for the listen function, the center button (5) displays listen labels on any display expansion panel (XPL-12 or XPL-22) connected to the panel. Momentarily pressing and quickly releasing the (5) button will cause all XPL panels to display the listen labels assigned to the selectors. If the listen and talk labels are the same, then there will be no change. The function will time-out after 5 seconds.

Swap Button (9)

The panel can support two sets of talk and listen label assignments for its selectors. The Swap window (9) button alternates between the two sets; the talk/listen windows display the labels for each. This effectively doubles the selectors.

If talk/listen paths are latched on when windows are swapped, the paths will be disconnected temporarily. When the windows are swapped back, the previously latched paths will be re-established. Should the label appear in both windows (not necessarily in the same position) the path will remain latched through the swap.

Additionally, the panel can be programmed to allow talks and listens to be active in both windows simultaneously.

This function can be inhibited from the configuration program.

Dial Button (*)

The “Dial” phone button turns the panel keypad into a touch-tone phone keypad, allowing DTMF tones (Touch Tones) to be generated for telephone dialing.

To place a telephone call:

1. Push a talk selector assigned to a telephone interface.
2. After the dial tone is heard, push the “Dial” phone button on the keypad.
3. Enter the phone number using the keypad buttons. The panel will automatically exit dial-tone mode after 5 seconds of keypad inactivity.
4. While the call is in progress, it is possible to enter dial-phone mode and send DTMF tones to the destination.

This function can be inhibited from the configuration program.

SA (Studio/Stage Announce) Button (#)

This button functions only if the panel is equipped with the OPT-100 Auxiliary Audio Input/Output option. Pressing and holding the “SA” button sends the microphone output to the studio announce output on the Auxiliary Audio I/O connector. All other talk paths from the panel to the matrix frame are turned off.

REAR-PANEL CONNECTORS

This section describes only those rear-panel functions directly affecting normal panel operation. These include the functions available through the “Miscellaneous” connector and those added by the use of the “OPT-100 Auxiliary Audio” connector. The actual functions these inputs and outputs perform depend on the installation of the individual panel. This section only describes the general use of these functions.

Miscellaneous Connector

The Miscellaneous connector includes the following functions:

- Logic input #1
- Logic input #2
- Programmable relay
- Mute relay

Logic Input #1 and #2

Each input can control one of several functions, determined through the configuration program. Typically, these inputs are connected to an external foot switch, a panel-mounted switch, or the logic output of another device.

The following functions are available:

- Mic On/Off—toggles the panel’s microphone on and off.
- Mute Mic Output To Frame—turns off the audio from the panel to the frame. It does not turn off the Hot Mic output (described in “OPT-100 Auxiliary Audio Option” on page 17).
- Mic Off —momentarily turns off the panel’s microphone.
- Answer Back Talk/Clear—functions the same as the panel’s “Answer Back” selector. Holding down the switch activates a talk to a label in the answer-back stack. To clear the label, quickly press and release the switch.
- Studio Announce—sends the output of the panel’s selected microphone (panel or headset) to the panel’s Studio Announce (SA) audio output, and activates the SA relay. The microphone output is not sent to the frame. The SA output and relay are only present if the panel has the OPT-100 Auxiliary Audio I/O Option installed. (The SA options are described in “OPT-100 Auxiliary Audio Option” on page 17).

- Speaker OFF—turns off the panel speaker, disabling all audible output from the panel.
- PTT: Activate All Talk Keys—implements a push-to-talk function for all talk selectors. When the logic input is active, the panel operates normally. When the logic input is deactivated, all active talk selectors are disabled. Any controls (relays, etc.) assigned to the labels are activated or deactivated along with their assigned labels. The LED indicators associated with the active talk selectors operate normally regardless of the PTT status. This input only controls latched talks.
- Activate Talk Switch #1— equivalent to pressing the panel's first (leftmost) talk selector; a momentary and latching activation.
- Activate Talk Switch #2—equivalent to pressing the panel's second talk selector; a momentary and latching activation.
- Activate Listen Labels Button—equivalent to pressing the "Listen Labels" button to display listen labels on any display expansion panel (XPL-12 or XPL-22) connected to the panel.
- PTT: Activate Two-Way Radio Keys—implements a push-to-talk function for all two-way radio talk selectors. When the logic input is active, the panel operates normally. When the logic input is deactivated, all active two-way radio talk selectors are disabled. Any controls (relays, etc.) assigned to the labels are activated or deactivated along with their assigned labels. The LED indicators associated with the active two-way radio talk selectors operate normally regardless of the PTT status. This input only controls latched talks.

Programmable Relay

Each ICS-2003 panel includes a relay controlled by the system program and independent of the local panel function. This relay can be assigned to any label(s) in the system, which will activate whenever a talk or listen is set to that label(s). If activating the relay is the only action desired, assign the relay to a Control label. See the *Eclipse Configuration System Manual* for more details.

The relay can activate an external device, such as an applause light in a studio, a cue light, or a security door lock. Any programmable relay in the system can be activated from any panel in the system, including a direct-inward-access caller.

Mute Relay

The mute relay is activated whenever any talk selector is activated at the panel. The mute relay is commonly wired such that whenever it is activated, the volume of the monitor speaker in that room is decreased (muted).

OPT-100 Auxiliary Audio Option

The OPT-100 Auxiliary Audio option provides the following features:

- Hot Mic output
- SA audio and relay outputs
- Auxiliary audio line level output

Hot Mic Output

The Hot Mic output is a balanced, line-level, transformer-isolated feed of the signal from the currently selected microphone (panel or headset). The Hot Mic output is active regardless of whether the panel has talk paths set and regardless of the front-panel's control settings.

Studio/Stage Announce Audio and Relay Outputs

The SA output is a balanced, line-level, transformer-isolated feed with the same signal sent to the Hot Mic output, except it is only active when the SA button on the panel's front panel is pressed or when activated by Logic Input #1 or #2, which is configured for the Studio Announce Function.

Auxiliary Audio Line Level Output

The Auxiliary Audio Line Level output is a balanced, line-level, transformer-isolated feed of the input to the panel's internal speaker. For example, this output could be used to feed an external amplifier connected to loudspeakers.

EXPANSION PANEL OPERATION

Optional expansion panels provide additional selectors that operate the same as a panel's selectors, including talk, listen, tally, and error indication.

The XPL-12 expansion panel provides 10 additional keys, while the XPL-22 provides 20 additional keys. Each expansion panel offers illuminated 5-character labels for every key.

Only one rack unit (1RU) of a standard Electronics Industry Association equipment rack is required for each expansion panel. The panels' compact size makes them ideal for use in TV control rooms, edit suites, mobile OB vans, and any other location where many talk/listen keys are necessary but space it at a premium.

Although the center button (5) on the panel's keypad is not marked for a function, it has the function of displaying "listen" labels on any display expansion panel (XPL-12 or XPL-22) connected to the panel. Momentarily pressing and quickly releasing the "5" button will cause all XPL panels to display the listen label assigned to the key. If the listen and talk labels are the same, then there will be no change. The function will time-out after 5 seconds.

2 INSTALLATION

INTRODUCTION

This chapter describes the installation of the ICS-2003/ICS-2003T display panel, including:

- Panel placement
- Wiring
- Mains AC power
- Adjustments
- Configuration
- Accessory panels

Leave at least 2 inches (51mm) of clearance behind the panel for connecting cables.

MOUNTING PANELS

Locate all intercom panels at comfortable heights for operation and leave at least 2 inches (51 mm) of clearance behind the rear of the panel's chassis to allow for cable connectors.

Accessory panels, that are intended to expand or enhance panel operation are usually mounted next to or near the panel with which they are associated. Leave at least 2 inches (51 mm) of clearance behind the rear of the panel to allow for cable connectors.

Accessory panels can be located as far as 25 ft. (7.6 m) away from the panel. A 6-ft. (1.8 m) cable is supplied to connect them.

WIRING

This section provides detailed wiring diagrams for all panels' wiring systems.

Eclipse uses either a twisted, 4-pair transmission, a single-pair twisted, or a coax scheme between the panel and the frame using the industry standard RJ-45 connector. Refer to *Installing an Eclipse Matrix System: An Overview* for RJ-45 connector installation and use, and the type of cable needed for connection between panels and frames.

Most panels have a DB-15M and an RJ-45 connector to connect them to the frame. Panels with only a DB-15M connector include a kit containing one DB-15F/RJ-45 adapter. The adapter allows the use of RJ-45 connectors on both ends of the connection between the frame and the panel.

Connections to external devices via the Miscellaneous connector, use the included DB-15M connector to construct one or more cables to connect external devices to the panel.

The following sections describe connecting the panel to the matrix frame, and all the connections between the panel and local devices.

Each of the following sections describes cable and panel connector wiring:

- Analog matrix frame to panel wiring
- Digital matrix frame to panel wiring
- Matrix panel Miscellaneous connector wiring
- OPT-100 Auxiliary Audio I/O option
- Binaural headset wiring

ANALOG MATRIX FRAME TO PANEL WIRING

The analog audio RS-422 data communications module (COM-10) uses a 4-pair wiring scheme between the frame and panels. This module requires an MVX-A16 card in the frame.
Although some Matrix Panels have a DB-15M (male) connector for connection to the Matrix frame, most have a built-in RJ-45 connector. For those panels with a DB-15 male connector, Vitec Group Communications provides a properly wired DB-15F (female) to RJ-45 adapter for direct connection with RJ-45 terminated cables.
Additionally, panels configured for digital communication are equipped with a BNC.
Four-pair analog wiring is typically wired with shielded CAT5 RJ-45 cable.

- Pair 1 transmits analog audio from the matrix port to the panel.
- Pair 2 transmits RS-422 data from the panel back to the matrix card port.
- Pair 3 transmits analog audio from the panel to the matrix card port.
- Pair 4 transmits RS-422 data from the matrix port back to the panel.

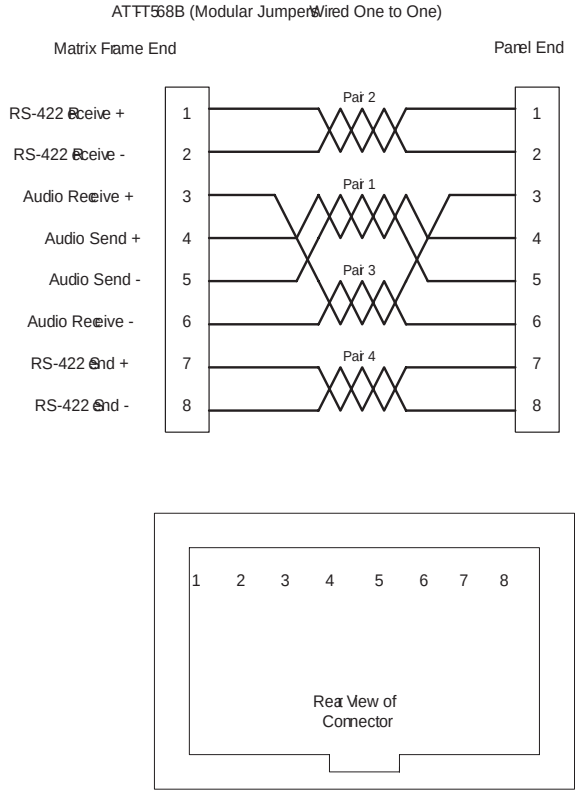

Figure 2-4: Matrix Frame to Panel Wiring

DIGITAL MATRIX FRAME TO PANEL WIRING

The ICS-2003T differs from the ICS-2003 because it contains an internal digital audio/data communications module (COM-20) that works in conjunction with the DIG-2 digital interface module to connect digital panels to the matrix.

The DIG-2 digital interface module offers two options for wiring the frame to intercom panels. One option is a single pair of double shielded (braid and foil) 24 AWG conductor CAT-6 Enhanced STP cable with RJ-45 connectors.

In addition, each panel may require other connector wiring, depending on what options and accessories are installed.

Single-Pair Digital

Single-pair digital wiring requires double-shielded 24 AWG conductor CAT-6E enhanced STP cable with RJ-45 connectors. Pair 1 transmits and receives multiplexed audio or data between the matrix port and the panel.

Note: Ensure that the Select switch on the panel's rear panel is in the correct position for the intended use.

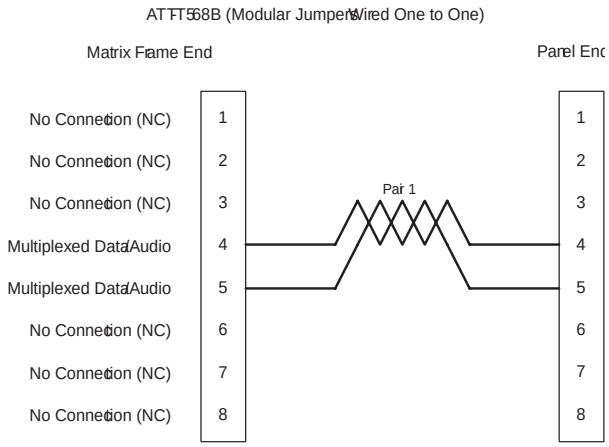

Figure 2-5: Matrix Frame to Digital Panel Wiring Using RJ-45

MATRIX PANEL MISCELLANEOUS CONNECTOR WIRING

Most local devices connect with the panel via the Miscellaneous connector.

The following sections discuss how to wire the various functions available on the “Miscellaneous” connector.

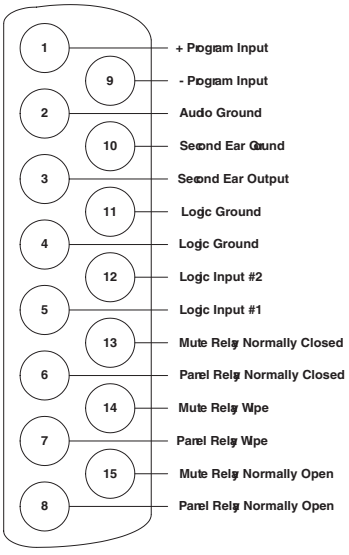

Figure 2-6: Miscellaneous Connector Pinout

External Program Feed Input

The external program feed input allows the panel operator to simultaneously monitor audio from an external source and intercom audio.

The input is designed to accept a balanced, line-level audio feed at a nominal level of 0 dB. The program feed input passes through the panel’s “Program” volume control before being mixed with the audio at

the panel. The program feed (program audio) can be heard on the panel's speaker and headset; it cannot be heard by other panels in the Matrix system.

To connect an external program feed to the panel:

1. Connect the balanced audio pair to pins 1 and 9.
2. Connect a shield or ground connection if available to the connector's pin 2 (see Figure 2-6 on page 1-4).

Logic Input #1 and #2

Each input can control one of several functions, determined through the configuration program. Typically, these inputs are connected to an external foot switch, a panel-mounted switch, or the logic output of another device.

The following functions are available:

- Mic On/Off—toggles the panel's microphone on and off.
- Mute Mic Output To Frame—turns off the audio from the panel to the frame. It does not turn off the Hot Mic output (described in "OPT-100 Auxiliary Audio I/O Option" on page 8). For an example of how to use this option, see "External Program Feed Input" on page 4.
- Mic Off —momentarily turns off the panel's microphone.
- Answer Back Talk/Clear—the same functions as the panel's "Answer Back" key. Holding down the switch activates a talk to a label in the answer-back stack. To clear the label, quickly press and release the switch.
- Studio Announce—sends the output of the panel's selected microphone (panel or headset) to the panel's Studio Announce (SA) audio output, and activates the SA relay. The microphone output is not sent to the frame. The SA output and relay are only present if the panel has the OPT-100 Auxiliary Audio I/O Option installed. (The SA options are described in "OPT-100 Auxiliary Audio I/O Option" on page 8).
- Speaker OFF—turns off the panel speaker, disabling all audible output from the panel.
- PTT: Activate All Talk Keys (Push To Talk)—when enabled from the configuration program and the logic input is active, the panel behaves normally. When this function (logic level) is deactivated, it disables activation of all talk labels, implementing a push-to-talk function for the panel. Any controls (relays, etc.) assigned to the labels are activated or deactivated along with their assigned labels. The LED indicators associated with the active labels behave normally regardless of this input's activity. This input controls momentary and latched talks.
- Activate Talk Switch #1—equivalent to pressing the panel's first (leftmost) talk selector; a momentary and latching activation.

• Activate Talk Switch #2—equivalent to pressing the panel's second talk selector; a momentary and latching activation.

• Activate Listen Labels Button—equivalent to pressing the "Listens" button on the keypad; all modes of the "Listens" button are supported.

• PTT: Activate Two-Way Radio Keys—implements a push-to-talk function for all two-way radio talk selectors. When the logic input is active, the panel operates normally. When the logic input is deactivated, all active two-way radio talk selectors are disabled. Any controls (relays, etc.) assigned to the labels are activated or deactivated along with their assigned labels. The LED indicators associated with the active two-way radio talk selectors operate normally regardless of the PTT status. This input only controls latched talks.

Use normally open type switches to activate the logic inputs. Connect the switches as follows (Figure 2-6 on page 1-4):

• Logic input #1—pins 4 to 5 (pin 4 = ground)

• Logic input #2—Pins 11 to 12 (pin 11 = ground)

Note: Do not apply external voltage to the logic inputs.

Mute Relay Contacts

The mute relay is activated whenever any talk selector is activated at the panel. The mute relay is commonly wired such that whenever it is activated, the volume of the monitor speaker in that room is decreased (muted). See Figure 2-6 on page 1-4.

Both normally open and normally closed contacts are provided. They are rated at 1 Amp at 24 VDC. This relay is not designed for switching mains AC line voltage. To switch an external device running on mains AC line voltage, use an external relay (or other switching mechanism) activated by this relay.

Programmable Relay Contacts

Each panel includes a relay controlled by the system program and independent of the local panel function. This relay can be assigned to any label(s) in the system, which will activate whenever a talk or listen is set to that label(s). If activating the relay is the only action desired, assign the relay to a Control label. See the *Eclipse Configuration System Manual* for more details.

The relay can activate an external device, such as an applause light in a studio, a cue light, or a security door lock. Any programmable relay in the system can be activated from any panel in the system, including a direct-inward-access caller. Figure 2-6 on page 1-4 shows the wiring of the relay contacts to the Miscellaneous connector.

Both normally open and normally closed contacts are provided. They are rated at 1 Amp at 24 V DC. This relay is not designed for switching mains AC line voltage. To switch an external device running on mains

AC line voltage, use an external relay (or other switching mechanism) activated by this relay.

OPT-100 AUXILIARY AUDIO I/O OPTION

The OPT-100 Auxiliary Audio option provides the following features:

- Hot Mic output
- SA audio and relay outputs
- Auxiliary audio line level output

Figure 2-7 shows the pinout for the intercom panel's DB-15F Auxiliary Audio I/O connector. Following are descriptions and wiring information for the OPT-100 Auxiliary Audio I/O option.

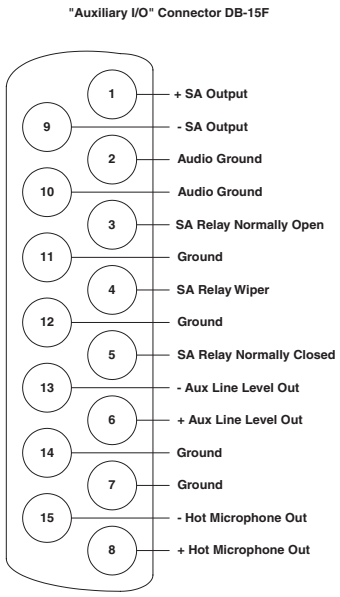

Figure 2-7: Auxiliary I/O Connector

Hot Mic Output

The Hot Mic output is a balanced, line-level, transformer-isolated feed of the signal from the currently selected microphone (panel or headset). The Hot Mic output is active regardless of whether the panel has talk paths set and regardless of the front-panel's control settings. Connect to pins 8 and 15 for a balanced output. Pin 7 is available as a shield or ground source (see Figure 2-7).

Studio/Stage Announce Audio and Relay Outputs

The SA output is a balanced, line-level, transformer-isolated feed with the same signal sent to the Hot Mic output, except it is only active when the SA button on the panel's front panel is pressed or when activated by Logic Input #1 or #2, which is configured for the Studio Announce Function.
Connect to pins 1 and 9 for a balanced SA audio output. Pin 2 is available as a shield or ground source (see Figure 2-7).

Both normally open and normally closed contacts are provided. They are rated at 1 Amp at 24 VDC. This relay is not designed for switching mains AC line voltage. To switch an external device running on mains AC line voltage, use an external relay (or other switching mechanism) activated by this relay (see Figure 2-7). The following table shows the pins available for the SA relay.

Pin Description	Pin Number
N.O. (normally open)	3
WIPER (common)	4
N.C. (normally closed)	5

Table 2-1: Studio Announce Pins Availability

Auxiliary Audio Line Level Output

The Auxiliary Audio Line Level output is a balanced, line-level, transformer-isolated feed of the input to the panel's internal speaker. For example, this output could be used to feed an external amplifier connected to loudspeakers.
Connect to pins 6 and 13 for a balanced output. Pin 14 is available as a shield or ground source (see Figure 2-7).

BINAURAL HEADSET WIRING

Although the panel has a second earphone output, it functions and is wired differently than some other ICS panels. The output is not available on the "Miscellaneous" connector, but on the panel's main board on a separate header connector. This output would be available if a six-pin headset connector is installed on the front or rear of the panel.
The default configuration of the panel has both earphone outputs being fed with intercom and program audio. Figure 2-8 shows the wiring of a six pin XLR connector for a binaural headset.

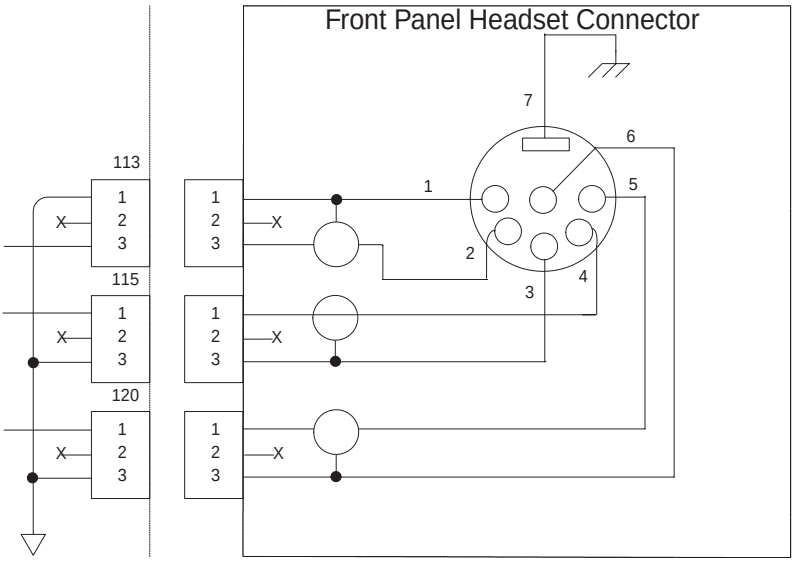

Figure 2-8: Binaural Headset Wiring

MAINS AC POWER

The panel has a separate, external DC power supply with a removable AC power cord. The power supply is “universal,” operating over a voltage range of 90 to 260 VAC and 45 to 65 Hz. The maximum dissipation is 30 W.
A bracket has been provided to mount this external supply if necessary.

ADJUSTMENTS

The following panel parameters are adjustable internally on the panel’s main PCB by selecting options in the configuration program:

- Headset Sidetone
- Panel Microphone Gain
- Speaker Mute
- Page Volume Level
- Panel-to-Matrix card Baud Rate

All these parameters are set to factory defaults. Most panels should operate at these default settings; however, some applications may require readjustment.

HEADSET SIDETONE

Sidetone is the sound of the user’s voice in his headset.
Refer to the *Eclipse Configuration System Instruction Manual* for instructions on adjusting sidetone.

PANEL MICROPHONE GAIN

The preamplifier gain of the panel microphone can be adjusted over a range of 0 to 10 dB; the maximum is the panel microphone gain's default setting. However, if two panels are talking to each other at the same time with the panel microphone gain set to maximum, feedback may occur even if the speaker mute (see "Speaker Mute") is set to maximum. In this case, it will be necessary to turn the panel microphone gain down. Similarly, in some noisy environments it may be necessary to turn the panel microphone gain down and have the operator talk more closely into the microphone.
Refer to the *Eclipse Configuration System Instruction Manual* for instructions on adjusting panel microphone gain.

SPEAKER DIM

When a panel microphone and a speaker are used together, feedback is possible. To reduce this possibility, the panel software will mute (turn down) the speaker level by some predetermined amount when both the microphone and speaker are enabled. The speaker mute can be adjusted from 0 to 15 dB; its default setting is 6 dB.
Refer to the *Eclipse Configuration System Instruction Manual* for instructions on muting the speaker.

PAGE VOLUME LEVEL

When Page Override is assigned to a label, the audio level at the destination panel(s) is predetermined. This function allows talking to someone even if his panel's volume control is off. Two things will happen when a panel activates such a label:

- If the destination speaker was off, it will turn on.
- The panel(s)'s speaker output will be at the predetermined level regardless of the "Intercom" volume control setting, unless this control is set higher than the predetermined level.

The page volume level can be adjusted within a range of 0 to 10, equivalent to the front-panel control settings of 0 equals off and 10 equals full pot. The page volume level's default setting is 5.
Refer to the *Eclipse Configuration System Instruction Manual* for instructions on using Page Override.

CONFIGURATION

Assign each panel's name and other parameters by using the Eclipse Configuration System Program (see *Eclipse Configuration System Manual* for more information). Also refer to the Operation chapter for details regarding the configuration options available from the ICS-2003's menus.

ACCESSORY PANELS

The following sections describes how to install the following optional, accessory key panels:

- The XPL-12 Display Expansion Panel adds 10 talk/listen selectors to a panel.
- The XPL-22 Display Expansion Panel adds 20 talk/listen selectors to a panel.

The installation procedure is identical for these two panels.

XPL TYPE EXPANSION PANELS

The XPL series provides selectors labeled with electronic displays that are automatically updated whenever changes are made.
Only one rack unit (1RU) of a standard Electronics Industry Association equipment rack is required for each expansion panel. The panels' compact size makes them ideal for use in TV control rooms, edit suites, mobile OB vans, and any other location where many talk/listen keys are necessary but space it at a premium.
Model XPL-12 provides 10 additional selectors with displays and model XPL-22 provides 20 additional selectors with displays. Each panel can accept a maximum of 60 additional selectors.

MOUNTING

All accessory panels are mounted in a standard 19-inch wide (48.3 cm) standard Electronics Industry Association rack, requiring one unit of rack space each. Leave at least 2 in. (51 mm) of clearance behind the rear of the chassis to allow for cable connectors.

POWER

Each XPL panel is powered by an external AC transformer (included). Confirm that the transformer is correct for the line voltage being used. To connect the AC power transformer to an XPL panel, route the transformer's secondary lead to the "AC Power Input" connector on the back of the panel. This is a 2.1 mm coax connector. When routing the lead, use the lead stress relief on the back of the panel. The panel can be powered by any 12- to 16-V RMS AC source rated for 750 mA.

PANEL CONNECTION

A cable is supplied with each panel to connect it to a panel or to additional panels. The cable is 6-ft. long (1.8 m) and has a DB-9F connector on one end and a DB-9M connector on the other end. If custom length cables are to be made, they should be made with 9 conductor control cable with 22 to 24 AWG wire. The pins should be wired one-to-one between the male and female connectors. The maximum distance between the panel and the last expansion panel should be 25 ft. (7.6 m).
To connect an accessory panel to an intercom panel:

1. Plug the DB-9M end of the cable supplied into the “Accessory Panel” connector on the back of the panel.
2. Plug the DB-9F end into the “From Intercom Panel” connector on the rear panel of the accessory panel.

To connect an additional accessory panel:

1. Plug the DB-9M end of the additional key panel’s cable into the “To Next Expansion Panel” connector on the back of the preceding key panel.
2. Plug the DB-9F end of that cable into the “From Intercom Panel” connector on the back of the additional key panel.

More panels can be added by using this “daisy-chaining” method. The numbering of expansion selectors will be in the order of the daisy chaining. The first panel will be selectors 1 to 20, the second will be selectors 21 to 40, and so forth.

CONFIGURATION

After physically placing the key panels and connecting them to a panel, the number of accessory keys installed in the panel must be programmed into the configuration program. Refer to the *Eclipse Configuration System Instruction Manual* for more information.

3 MAINTENANCE

INTRODUCTION

This chapter provides panel microprocessor resetting instructions, maintenance menu use, troubleshooting guidelines, schematics, assembly drawings, and component lists.

PANEL RESET

The panel's microprocessor has a reset button located in an unmarked hole just below the program volume knob on the right side of the unit's front panel. If the panel is acting erratically, try resetting it by performing one of the following:

- Insert a small screwdriver or a stiff piece of wire (such as a bent paper clip) into the hole and pushing the reset button.
- Unplug the panel from AC power and reconnect.

TROUBLESHOOTING

When experiencing the symptoms listed below, attempt the following solutions in the order outlined. The solutions are listed in order of difficulty with the first being the most simple and easy.

• The panel's display and all front-panel indicators fail to light.

1. Check mains AC power into the panel.
2. Ensure the external power supply is properly connected to the panel.
3. Replace the panel.

• The display shows unexpected characters.

1. Power the panel off and turn it back on.
2. Reset the panel's matrix card in the matrix frame.
3. Replace the panel.

• The LED indicator above a selector does not light when the selector is pressed.

1. Ensure the selector has a label assigned to it (the LED indicator will not light without an assigned label).
2. Reset the panel.
3. Replace the panel.

• Keypad button functions do not operate, or the panel beeps when a button is pressed (affected buttons could include "Assign," "Panel," "Dial," "Menu," and "Swap").

1. Ensure the function has not been inhibited from the configuration program of the panel's local Configuration menu.
2. Reset the panel.
3. Replace the panel.

• The panel appears to activate talk paths, but other panels can't hear the panel operator.

1. Check "Mic On/Off" and "Panel Mic" buttons to ensure the intended microphone is selected and on.
2. If the correct microphone is turned on, ensure the panel audio has not been muted externally through the logic inputs.
3. Make sure the panel has not been defined as a nearby panel.
4. Activate the Matrix Loopback mode from the panel's Maintenance menu to check the audio paths to the matrix.
5. Enable eavesdropping on the panel.
6. Test the integrity of the panel's audio path by temporarily setting a forced listen to it.
7. Reset the panel.
8. Replace the panel.

• The panel is inoperative and all red LEDs flash slowly.

1. Wait 60 seconds. If the matrix frame has just been powered up, it is possible it is still downloading the configuration to the Matrix cards.
2. Ensure the cable connecting the panel to the matrix is plugged in at both ends.
3. Check the integrity of the data paths, especially the polarity for panels using a COM-10 communication module.
4. Check the configuration program to ensure the panel has been assigned the correct port type.
5. Confirm the matrix card type matches the panel. Panels with COM-10 communication modules should have an MVX-A16.
6. Reset the panel's matrix card in the Matrix frame.
7. Replace the panel's matrix card in the Matrix frame.
8. Reset the panel.
9. Replace the panel.

• No audio from the panel's speaker.

1. Ensure the 'Intercom" knob on the panel's front panel is turned up.
2. Ensure the "Speaker On/Off" button is on.
3. Check whether audio can be heard in a headphone.
4. Check the configuration program and the panel's logic inputs to ensure the speaker has not been software disabled.
5. Test the integrity of the panel's audio path by temporarily setting a forced listen to it.
6. Reset the panel's Matrix card in the Matrix frame.
7. Replace the panel's Matrix card in the Matrix frame.
8. Reset the panel.

‘

9. Replace the panel.

• The operator cannot hear another panel’s page or call signal tones.

1. Adjust the “Page Volume” control of the panel using the configuration program (refer to the *Eclipse Configuration System Manual*).
2. Check the panel’s configuration to see if page override is enabled.

• Announce tones (eavesdropping indication, change tones, etc.) aren’t heard at the panel.

Check the configuration program to see if the monitoring tones and change tones are enabled.

• No speaker audio from the external program feed.

1. Check the “Program” knob on the panel’s front panel.
2. Check the program source.
3. Reset the panel.
4. Replace the panel.

• The headphone isn’t receiving audio from the external program feed.

1. If the external program feed is audible in the speaker, check the panel’s configuration program to ensure the program was not disabled for the second earphone feed.
2. Replace the panel.

• Accessory panels do not function.

1. Check the accessory panel’s connection on the panel’s rear panel.
2. Ensure the external AC power transformers are correctly connected to the accessory panels.
3. Check the configuration program to ensure the correct number of selectors are configured.

BILL OF MATERIALS

Miscellaneous

Device	Description	Part No.
Cable	26 Pin 3 in Ribbon	730078
Cable	34 Pin Ribbon	730181
Cable	20 Pin Ribbon, 2mm connectors	730208
Display	60 x 480 Pixel EL Display	390056
Speaker	2 1/2 in. 8 OHM 3.5W	500103
Cord	Power	610022
Power Supply	+5, +12, & -12 V	760050

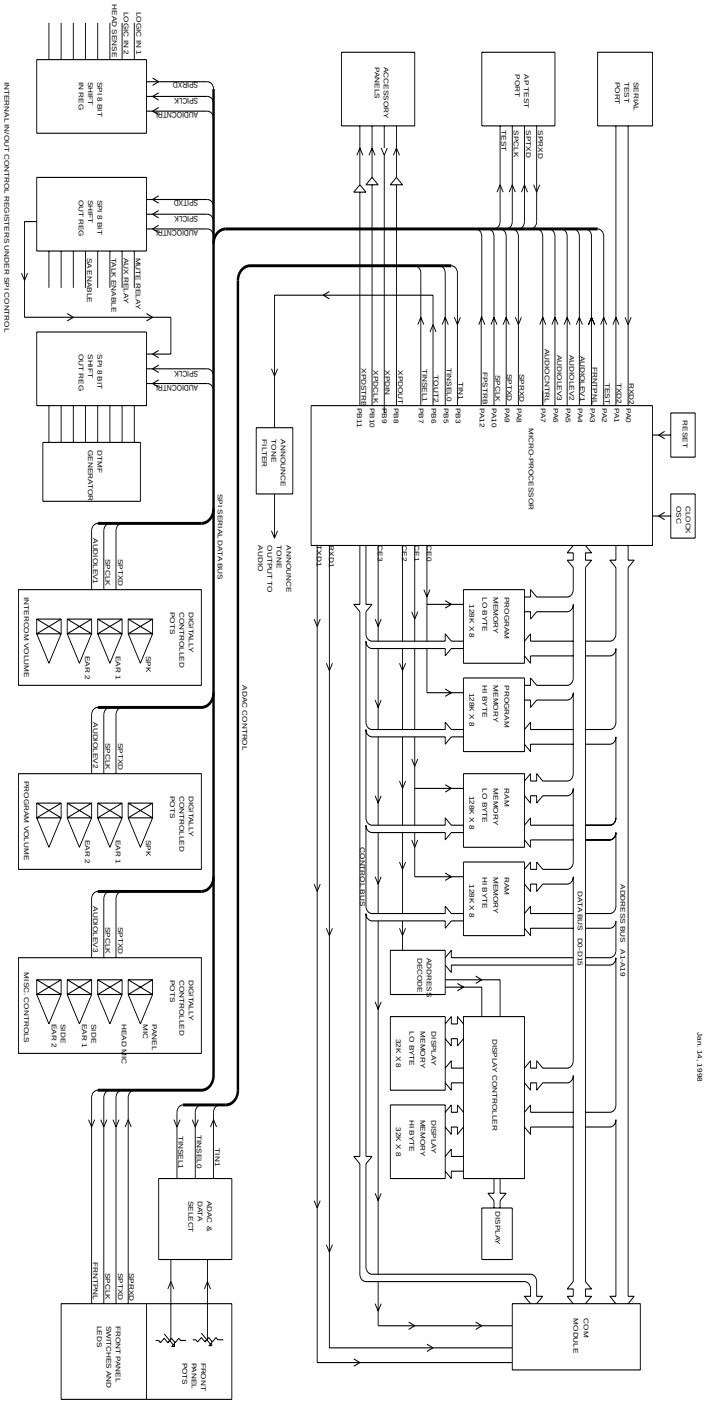

Figure 3-9: Digital Block Diagram—ICS-2003 Main PCB

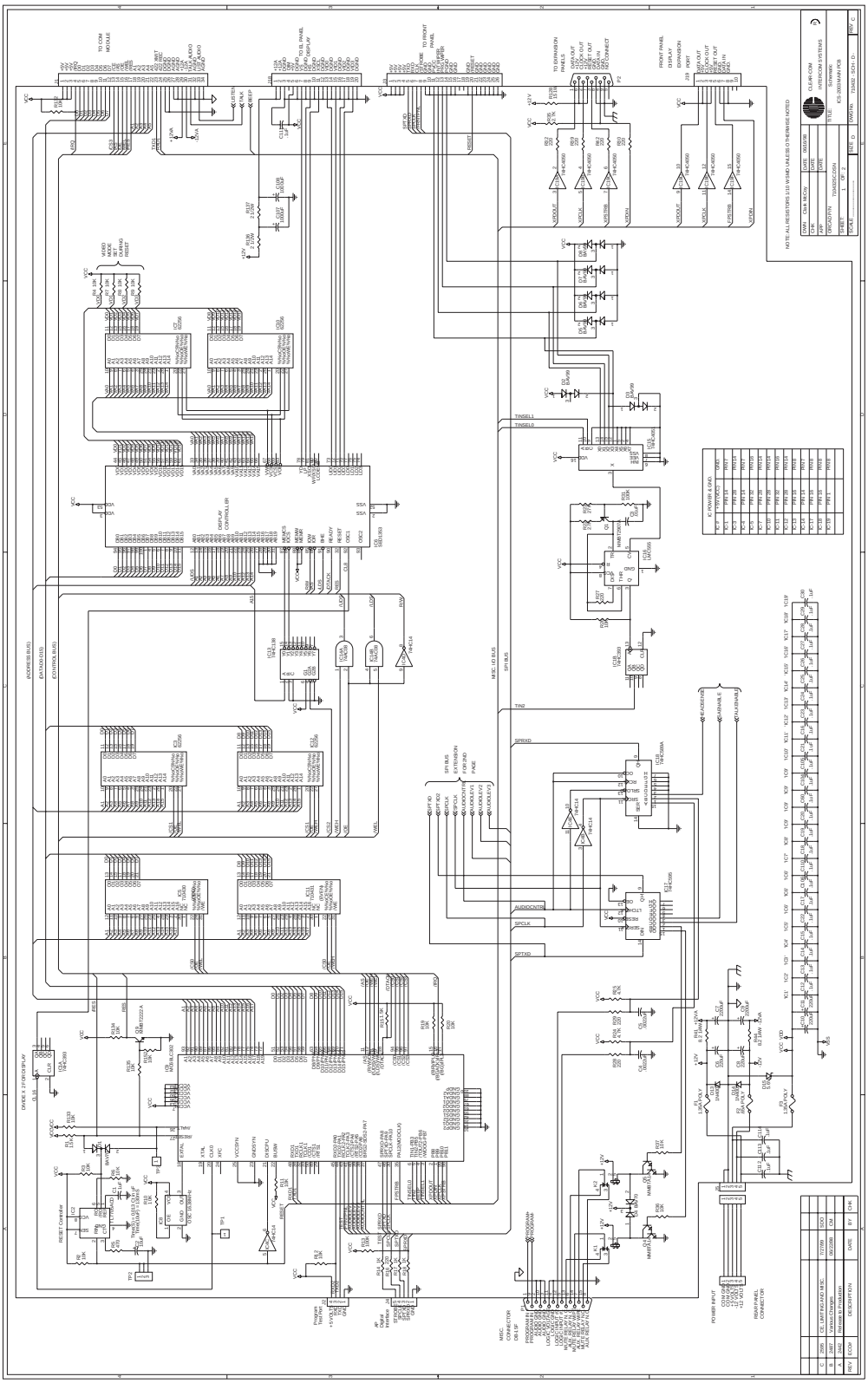

Figure 3-10: ICS-2003 Main PCB Sheet 1 of 2 Rev. C

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ICS-2003 AUDIO BLOCK DIAGRAM

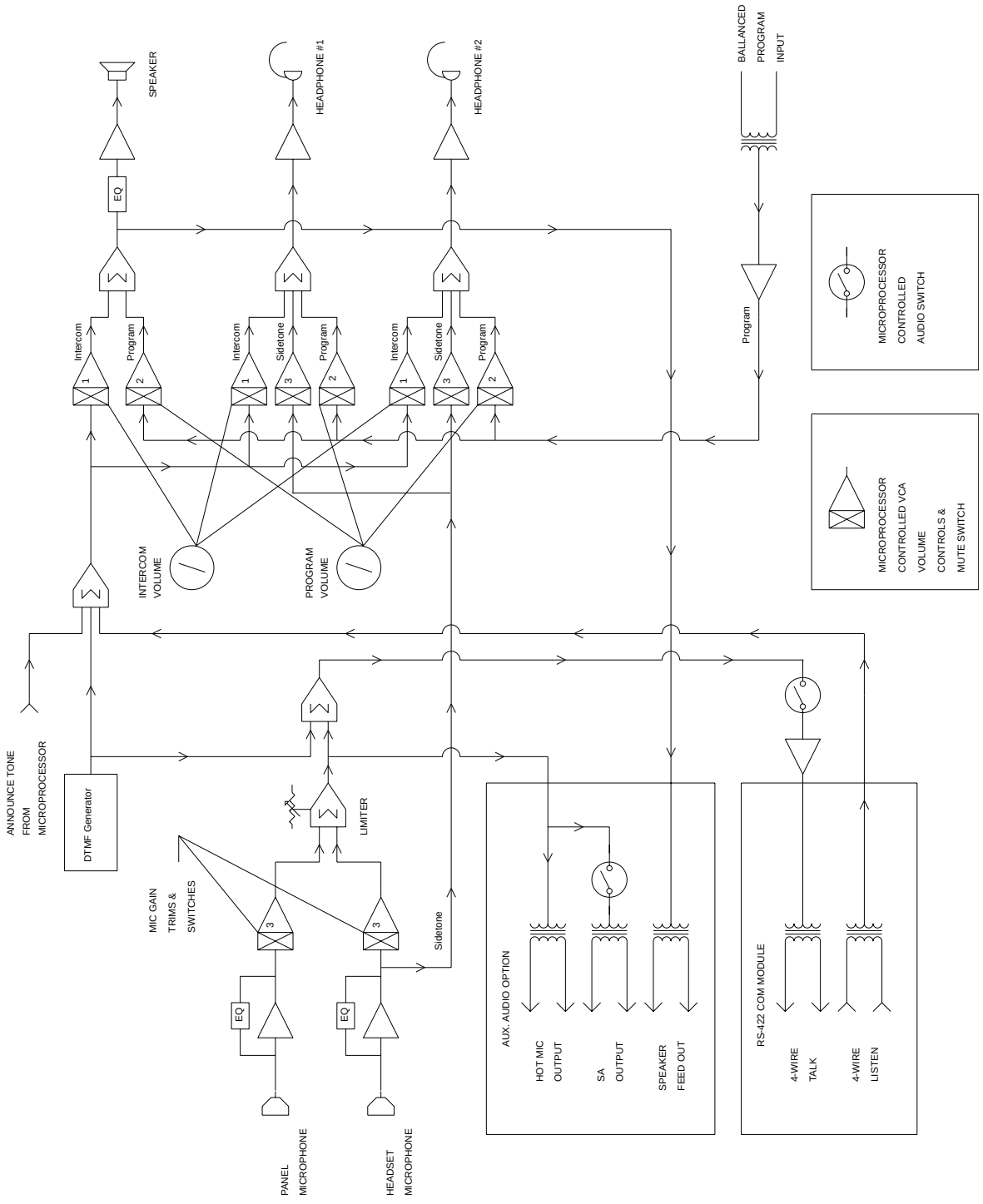

Figure 3-11: Analog Block diagram—ICS-2003 Main PCB

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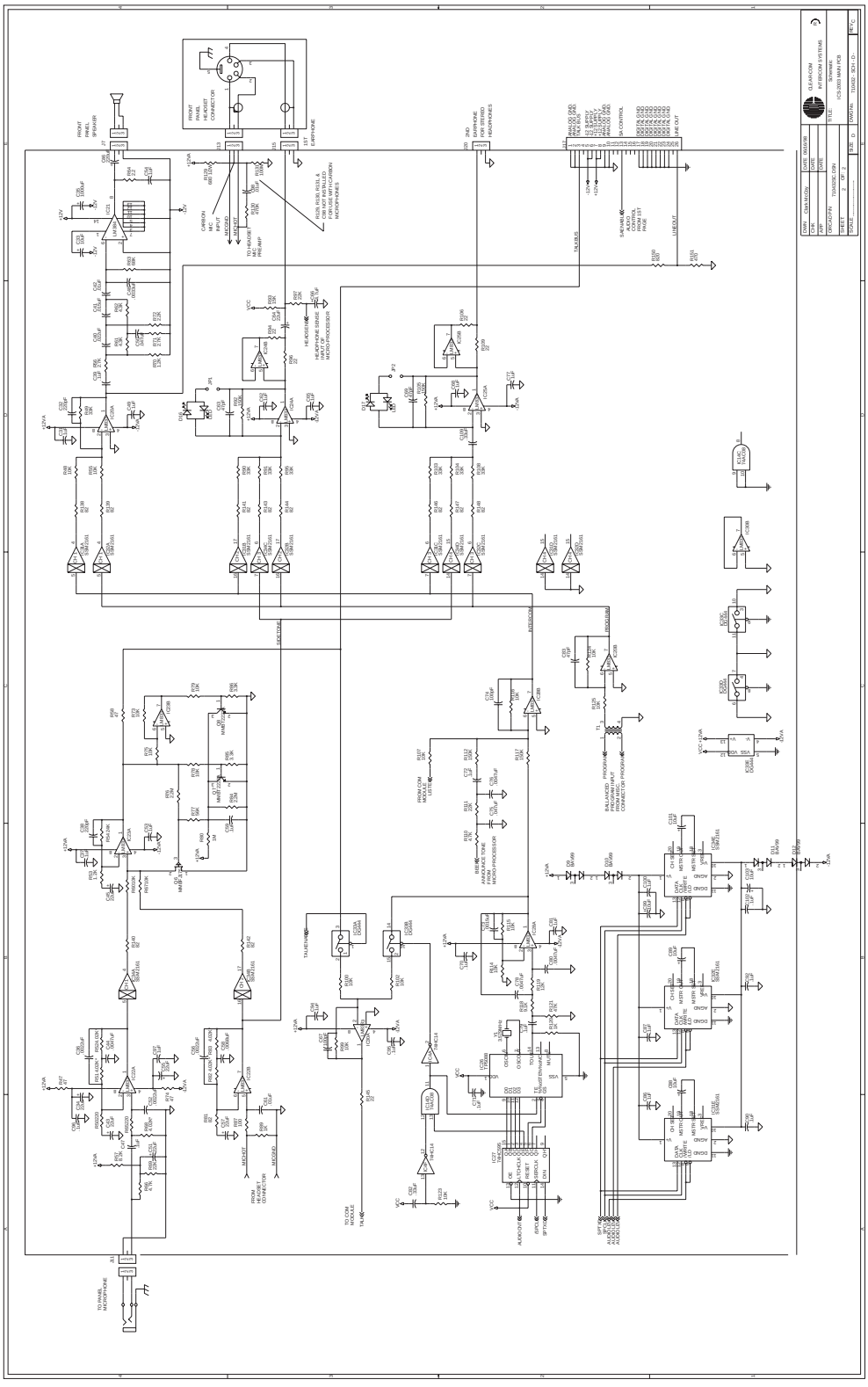

Figure 3-12: ICS-2003 Main PCB Sheet 2 of 2

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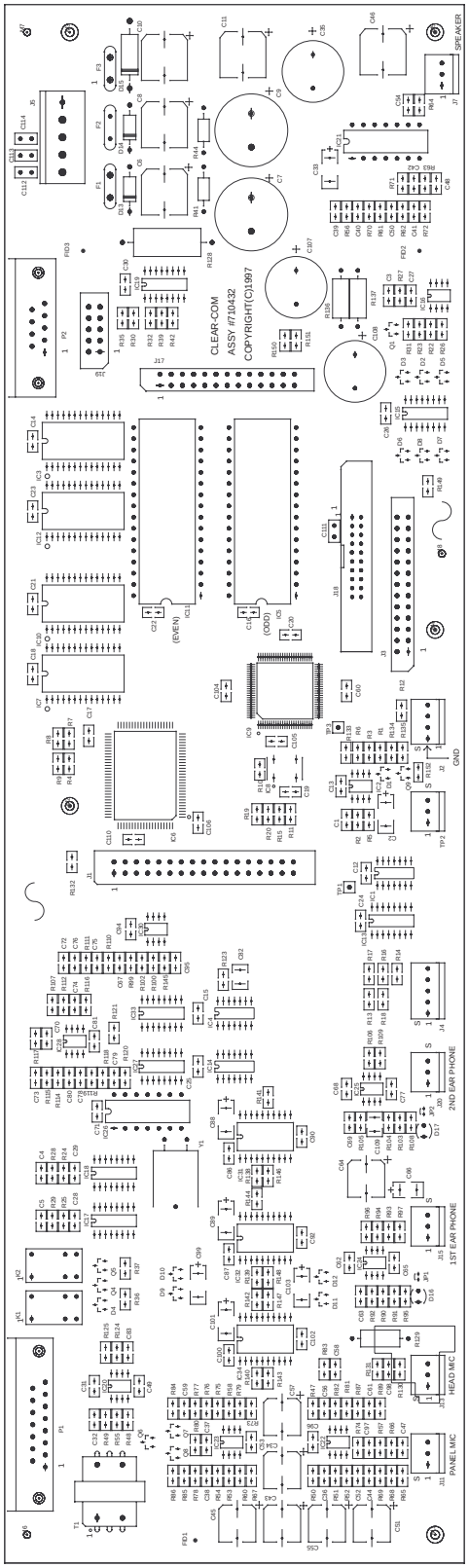

Figure 3-13: Assembly Drawing—ICS-2003 Main PCB

BILL OF MATERIALS FOR THE ICS-2003/2003T MAIN PCB

Capacitors

Value	Type	Volts	Tol.	Part #	Designator
47pF	Ceramic Disc SMD	50	5%	151120	C63 C69 C83
100pF	Ceramic Disc SMD	50	5%	151124	C67 C74
220pF	Ceramic Disc SMD	50	5%	151128	C32 C38
0.0015µF	Ceramic Disc SMD	50	5%	151138	C73
0.0022µF	Ceramic Disc SMD	50	10%	151152	C4 C5 C36 C52 C56
0.0033µF	Ceramic Disc SMD	50	10%	151154	C48
0.0047µF	Ceramic Disc SMD	50	10%	151156	C44 C76 C78 C80
0.0068µF	Ceramic Disc SMD	50	10%	151158	C58
0.01µF	Ceramic Disc SMD	50	10%	151160	C3 C42 C61 C98
0.015µF	Ceramic Disc SMD	50	10%	151162	C41
0.022µF	Ceramic Disc SMD	50	10%	151164	C40
0.047µF	Ceramic Disc SMD	50	10%	151168	C75 C50

Value	Type	Volts	Tol.	Part #	Designator
0.1µF	Ceramic Disc SMD	50	10%	151172	C1 C12 C13 C14 C15 C16 C17 C18 C19 C20 C21 C22 C23 C24 C25 C26 C27 C28 C29 C30 C31 C37 C39 C47 C49 C53 C54 C59 C60 C62 C65 C68 C70 C71 C72 C77 C79 C81 C86 C87 C90 C92 C94 C95 C96 C97 C100 C102 C104 C105 C106 C110
.33µF	Ceramic Disc SMD	25	10%	151178	C82 C109
4.7µF	Tantalum SMD	16	10%	151189	C66
10µF	Tantalum SMD	25	10%	151192	C2 C33 C88 C89 C101 C103
22µF	Aluminum SMD	50	20%	151200	C34 C43 C45 C51 C55 C57 C64
220µF	Aluminum SMD	25	10%	151204	C6 C8 C10 C11 C46
1000µF	Aluminum	35		150092	C35 C107 C108
2200µF	Aluminum	25		150120	C7 C9

Resistors & Resistor Packs

Value	Power	Type	Tol.	Part #	Designator
2 Ω	1/2	Carbon Film	5%	410173	R136 R137
2.2 Ω	1/10	SMD	5%	411181	R64
8.2 Ω	1/4	Carbon Film	5%	410166	R41 R44
15 Ω	1	Carbon Film	5%	410214	R128
22.1 Ω	1/10	SMD	5%	411230	R94 R96 R106 R109 R145
47.5 Ω	1/10	SMD	1%	411262	R47 R58 R74
82.5 Ω	1/10	SMD	1%	411285	R81 R138 R139 R140 R141 R142 R143 R144 R146 R147 R148
100 Ω	1/10	SMD	1%	411293	R87
221 Ω	1/10	SMD	1%	411326	R16 R27 R28 R29 R30 R32 R39 R42 R50 R65
475 Ω	1/10	SMD	1%	411358	R5 R151
680 Ω	1/2	Carbon Film	5%	410165	R129
825 Ω	1/10	SMD	1%	411381	R150
1.00 KΩ	1/10	SMD	1%	411389	R14 R17 R18 R89 R120
1.21KΩ	1/10	SMD	1%	41139	R53 R70
1.50KΩ	1/10	SMD	1%	411406	R15
2.21KΩ	1/10	SMD	1%	411422	R72
2.74KΩ	1/10	SMD	1%	411431	R22 R35 R56 R71
3.32KΩ	1/10	SMD	1%	411439	R85 R86

Value	Power	Type	Tol.	Part #	Designator
4.02KΩ	1/10	SMD	1%	411447	R51 R52 R68 R82 R83
4.32KΩ	1/10	SMD	1%	411450	R61 R62
4.75KΩ	1/10	SMD	1%	411454	R24 R25 R66 R110
8.25KΩ	1/10	SMD	1%	411477	R57
9.09KΩ	1/10	SMD	1%	411481	R118
10.0KΩ	1/10	SMD	1%	411485	R1 R2 R3 R4 R6 R7 R8 R9 R10 R11 R12 R19 R20 R26 R36 R37 R48 R55 R60 R67 R73 R75 R78 R79 R99 R100 R102 R107 R114 R115 R116 R123 R124 R125 R132 R133 R134 R135
12.1KΩ	1/10	SMD	1%	411493	R119
15.0KΩ	1/10	SMD	1%	411502	R93
22.1KΩ	1/10	SMD	1%	411518	R69 R97 R111
23.7KΩ	1/10	SMD	1%	411521	R54
27.4KΩ	1/10	SMD	1%	411527	R23
33.2KΩ	1/10	SMD	1%	411535	R49 R90 R91 R95 R103 R104 R108
47.5KΩ	1/10	SMD	1%	411550	R121
56.2KΩ	1/10	SMD	1%	411557	R77

Value	Power	Type	Tol.	Part #	Designator
68.1KΩ	1/10	SMD	1%	411565	R63
100KΩ	1/10	SMD	1%	411581	R13 R31
150KΩ	1/10	SMD	1%	411598	R92 R105 R112 R117 R130
1.0MΩ	1/10	SMD	5%	411677	R84
1.2MΩ	1/10	SMD	5%	411685	R80
2.2MΩ	1/10	SMD	5%	411710	R76

Diodes and Transistors

Device	Description	Part #	Designator
Diode	BAV70 Dual Diode Com Cath	481019	D1 D4
Diode	BAV99 Dual Diode Series SMD	481033	D2 D3 D5 D6 D7 D8 D9 D10 D11 D12
Transistor	2222A NPN 40V 600ma SMD	481026	Q7 Q8 Q9
Transistor	2907A PNP 60V 600ma SMD	481027	Q1
Transistor	J175 P-Ch JFET SMD	481056	Q6
Transistor	MPSA14 NPN 30V 300ma SMD	481038	Q4 Q5

Integrated Circuits

Device	Description	Part #	Designator
Analog IC	555 CMOS TIMER SMD	481051	IC16
Analog IC	LM384 POWER 4W OP AMP	480012	IC21

Device	Description	Part #	Designator
Analog IC	LM833 Dual Opamp SMD	481023	IC20 IC22 IC23 IC24 IC25 IC28 IC30
Analog IC	SSM2161 4-Ch Volume Ctn. SMD	481055	IC31 IC32 IC34
Analog SW	DG444 Quad SPST Analog SW	481050	IC33
DTMF Gen.	TP 5088 DTMF GEN.	480196	IC26
Logic IC	74AC08 Quad 2-IN AND Gate	481053	IC14
Logic IC	74HC14 Hex Schmitt Trig Invert	481052	IC4
Logic IC	74HC138 CMOS 3-8 Decoder	481059	IC13
Logic IC	74HC393 Dual 4 Bit Bin Cnt	481058	IC1
Logic IC	74HC589 Par IN/SER Out SMD	481054	IC18
Logic IC	74HC595 SerIN/PAROut SMD	481036	IC17 IC27
Logic IC	74HC4050 Hex Buf SMD	481057	IC19
Logic IC	74HC4051 8-CH Mux SMD	481001	IC15
Micro. P	68LC302 Micro Cont SMD	481049	IC9
ROM Mem.	EPROM ASSY, ODD, ICS-2003	710430	IC5
ROM Mem.	EPROM ASSY, EVEN, ICS-2003	710431	IC11
Regulator	7705 Supply Supervisor SMD	481018	IC2
RAM Mem.	62256 CMOS SRAM 32K X 8	481047	IC3 IC7 IC10 IC12

Device	Description	Part #	Designator
Video Cont.	SED1353 LCD Graph-ics Control	481060	IC6

Miscellaneous

Device	Description	Part #	Designator
Clock Osc	16.384MHZ OSC. SMD	231002	IC8
Connector	DB-9F RT ANG PC MTG	210186	P2
Connector	DB-15F RT ANG PC MTG	210187	P1
Connector	32 PIN IC DIP SOCKET .600	210324	IC5 IC11
Connector	2 X 10 2MM HEADER	210356	J18
Crystal	3.579545MHZ PARALLEL	230001	Y1
Fuse	0.65A POLYFUSE	520043	F2
Fuse	1.35A POLYFUSE	520044	F1 F3
Relay	SPDT 12V MINI PC	450006	K1 K2
Transformer	10K-10K Audio Xformer	560020	T1

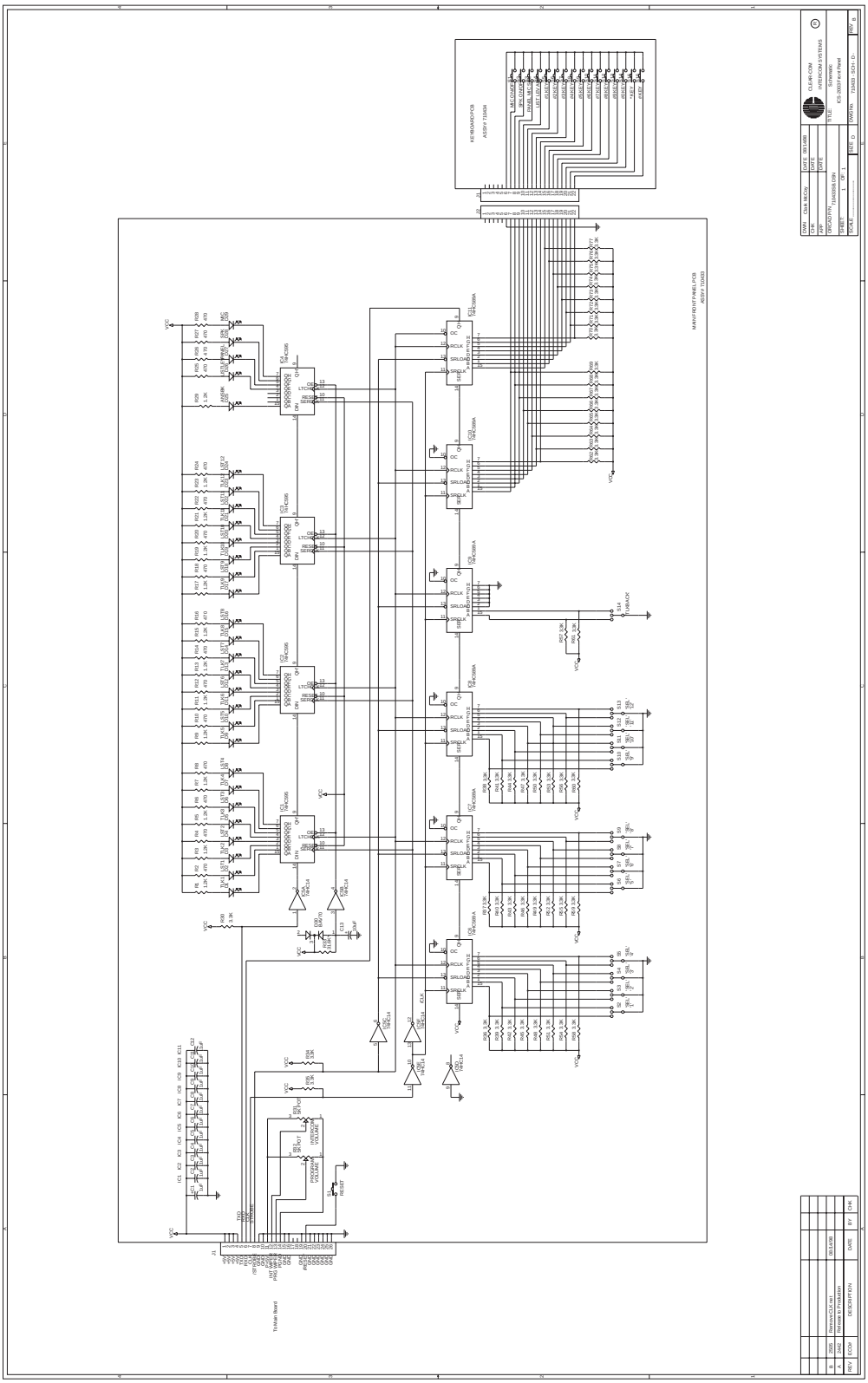

Figure 3-14: Schematic—ICS-2003 Front Panel PCB Rev. B

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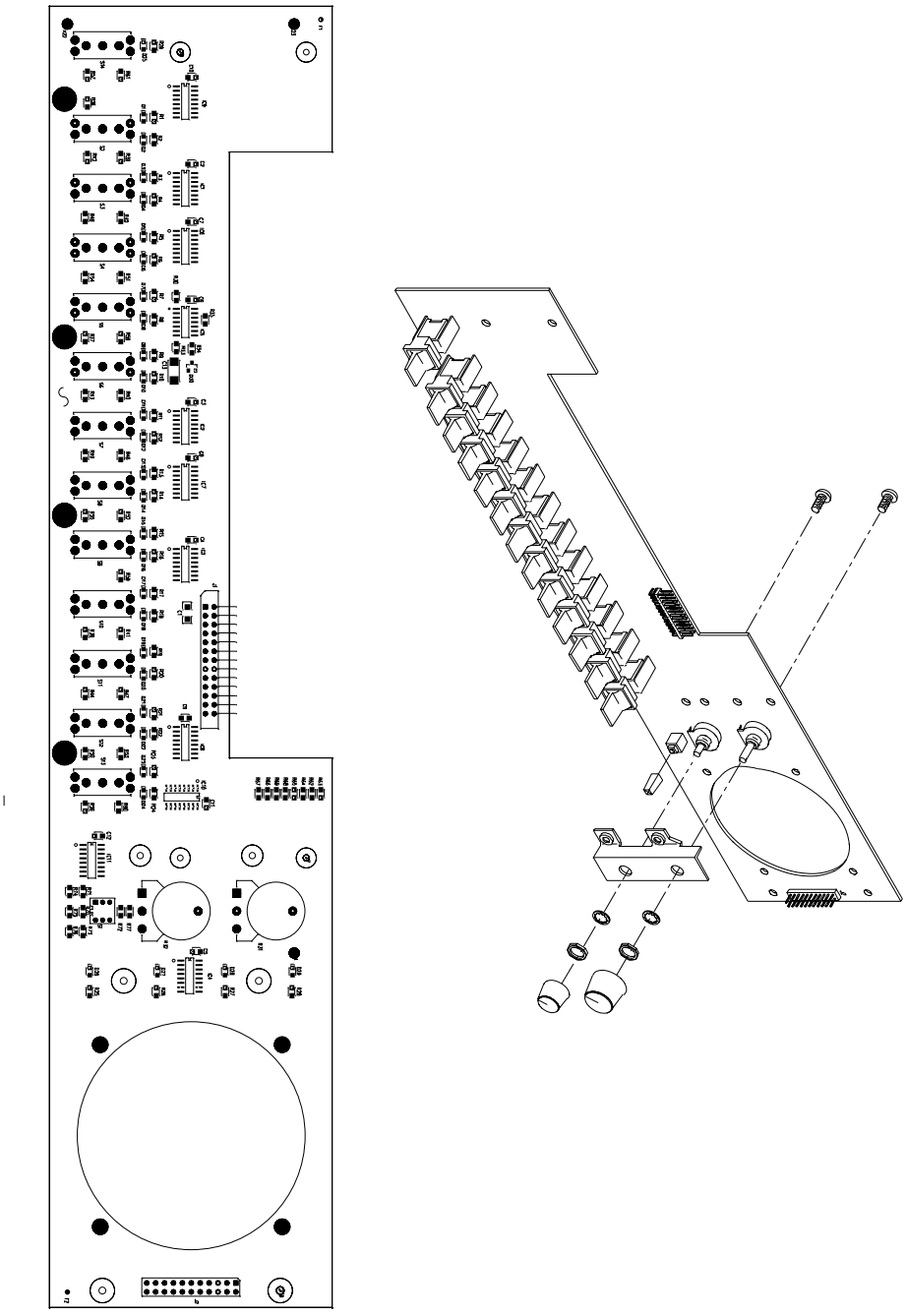

Figure 3-15: Assembly Drawing—ICS-2003 Front Panel PCB Rev. B

BILL OF MATERIALS FOR THE ICS-2003/2003T FRONT PANEL PCB

CAPACITORS

Value	Type	Volts	Tol.	Part #	Designator
0.1µF	Ceramic Disc SMD	50	10%	151172	C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12
1µF	Tantalum SMD	16	10%	151185	C1
10µF	Tantalum SMD	25	10%	151192	C13

Resistors & Resistor Packs

Value	Power	Type	Tol.	Part #	Designator
475 Ω	1/10	SMD	1%	411358	R2 R4 R6 R8 R10 R12 R14 R16 R18 R20 R22 R24 R25 R26 R27 R28
1.21KΩ	1/10	SMD	1%	411397	R1 R3 R5 R7 R9 R11 R13 R15 R17 R19 R21 R23 R29
3.24KΩ	1/10	SMD	1%	411438	R30 R34 R35 R36 R37 R38 R39 R40 R41 R42 R43 R44 R45 R46 R47 R48 R49 R50 R51 R52 R53 R54 R55 R56 R57 R58 R59 R60 R61 R62 R63 R64 R65 R66 R67 R68 R69 R70 R71 R72 R73 R74 R75 R76 R77
31.6KΩ	1/10	SMD	1%	411533	R33

DIODES AND TRANSISTORS

Device	Description	Part #	Designator
Diode	BAV70 Dual, Com. Cath. SOT23	481019	D30
LED	Red 5ma LED SMD 0805	391001	D1 D3 D5 D7 D9 D11 D13 D15 D17 D19 D21 D23 D25
LED	Green 5ma SMD 0805	391002	D2 D4 D6 D8 D10 D12 D14 D16 D18 D20 D22 D24 D26 D27 D28 D29

INTEGRATED CIRCUITS

Device	Description	Part #	Designator
Logic IC	74HC14 Hex Schmitt Trig S0IC16	481052	IC5
Logic IC	74HC589 Par IN/SER Out SMD	481054	IC6 IC7 IC8 IC9 IC10 C11
Logic IC	74HC595 SerIN/PAROut SMD	481036	IC1 IC2 IC3 IC4

MISCELLANEOUS

Device	Description	Part #	Designator
Knob	Grey Insert .61 Dia.	240076	R32
Knob	Grey Insert .45 Dia.	240077	R31
Pot	5K	470081	R32
Pot	5K	470082	R31
Switch	SP3T MOM-OFF-MOM PC Mtg	510080	S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13 S14
Switch	DPDT Mom. Push-button Switch	510102	S1

MISCELLANEOUS KEYBOARD PARTS

Device	Description	Part #	Designator
Connector	11 Pos Dual Row Socket	210362	J1
Keycap	SET OF 12, Keyboard	240071	
Keycap	SET OF 4, Keyboard	240072	
Switch	Push-button, Keyboard	510082	S1 S2 S3 S4 S5 S6 S7 S8 S9 S10 S11 S12 S13 S14 S15 S16

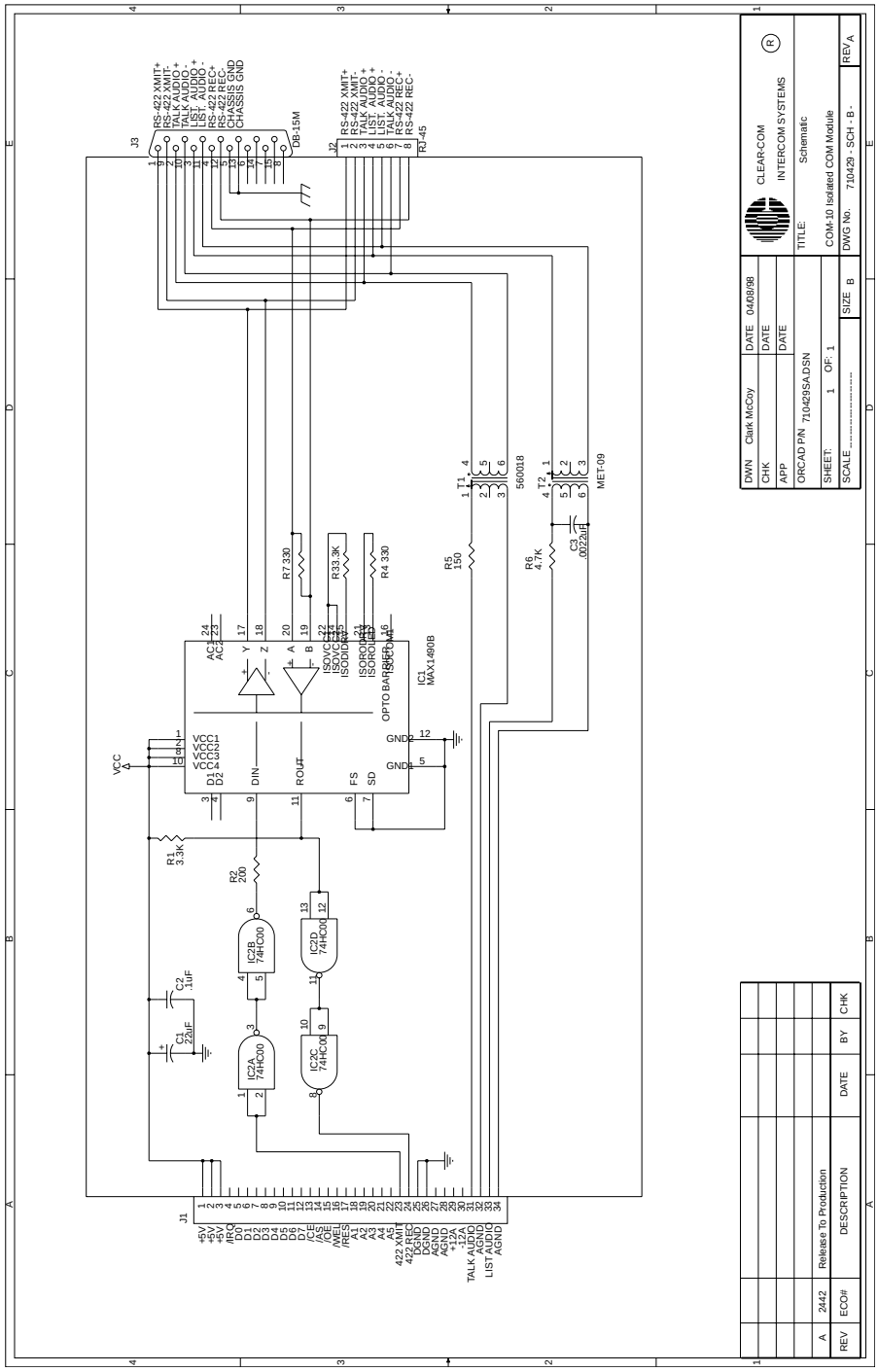

Figure 3-16: COM-10 Communications Module Schematic Rev. A

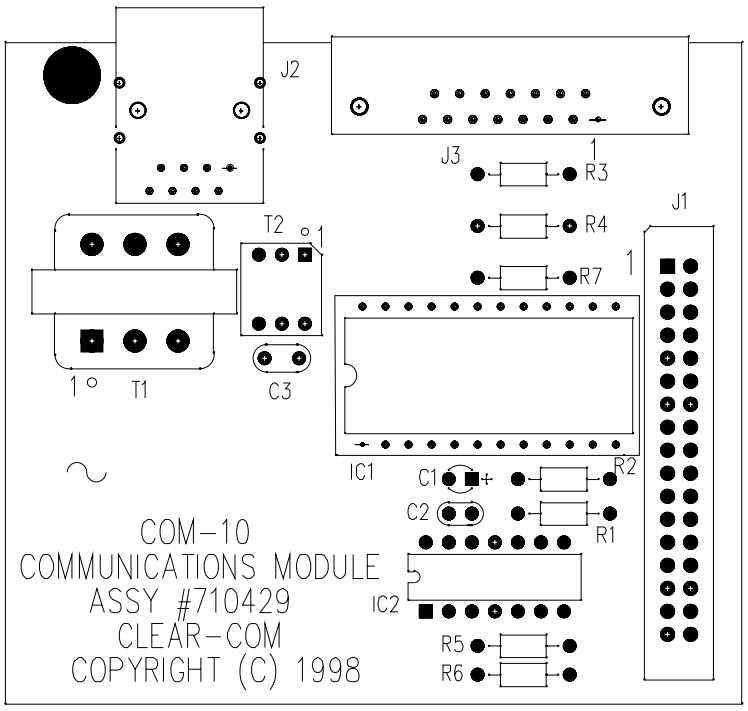

Figure 3-17: Assembly Drawing - COM-10 Communications Module Rev. A

BILL OF MATERIALS FOR THE ICS-2003/ICS-2003T COM-10 PCB

CAPACITORS

Value	Type	Volts	Tol.	Part #	Designator
22µF	Tantalum	16		150032	C1
0.1µF	Monolithic	50	10%	150035	C2
0.0022µF	Mylar	100	5%	150045	C3

RESISTORS & RESISTOR PACKS

Value	Power	Type	Tol.	Part #	Designator
150Ω	1/4	Carbon Film	5%	410006	R5
200Ω	1/4	Carbon Film	5%	410072	R2
330Ω	1/4	Carbon Film	5%	410061	R4
4.7kΩ	1/4	Carbon Film	5%	410013	R6
3.3kΩ	1/4	Carbon Film	5%	410015	R3 R1

INTEGRATED CIRCUITS

Device	Description	Part #	Designator
Interface IC	1490B Isolated RS422 Interface	480242	IC1
Logic IC	74HC00 Quad NAND	480157	IC2

MISCELLANEOUS

Device	Description	Part #	Designator
Connector	DB-15M Rt Ang PC Mtg	210188	J3
Connector	RJ-45 Rt Ang	210335	J2
Transformer	600CT/600CT	560018	T1
Transformer	10K:10K	560034	T2

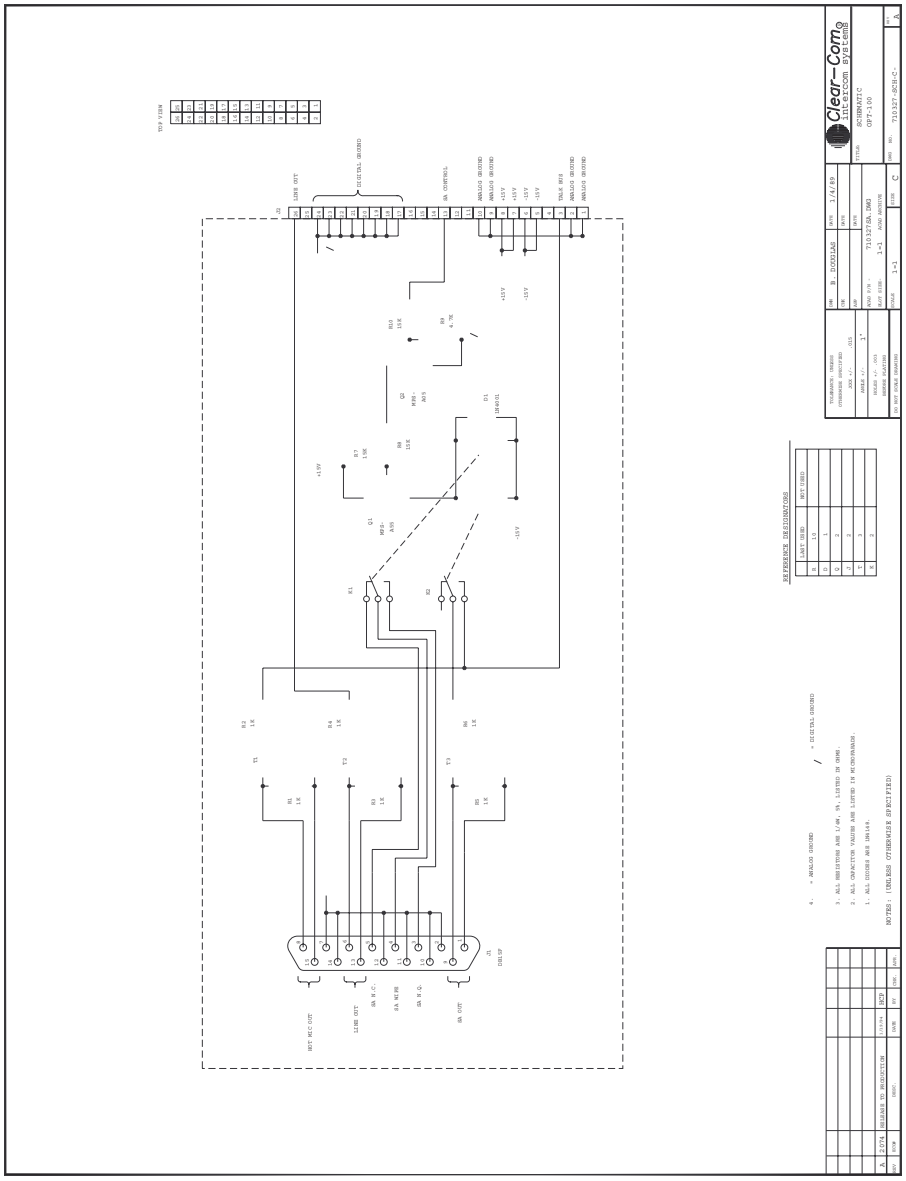

Figure 3-18: Schematic—OPT-100 (Aux Audio Option) Rev. A

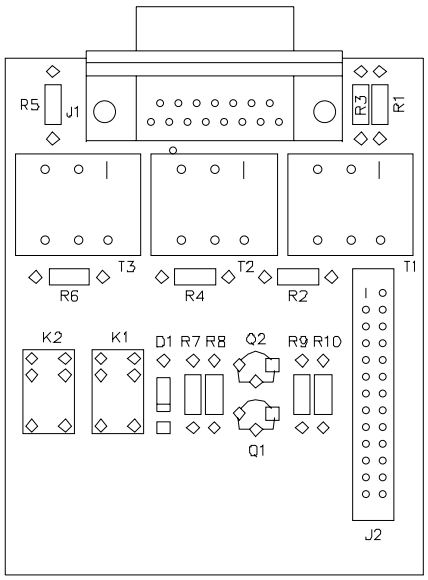

Figure 3-19: Assembly Drawing—OPT-100 Module Rev. A

BILL OF MATERIALS FOR THE OPT-100 PCB

Resistors & Resistor Packs

Value	Power	Type	Tol.	Part #	Designator
1kΩ	1/4	Carbon Film	5%	410010	R1 R2 R3 R4 R5 R6
4.7kΩ	1/4	Carbon Film	5%	410013	R9
15kΩ	1/4	Carbon Film	5%	410017	R7 R8 R10

Diodes and Transistors

Device	Description	Part #	Designator
Diode	1N4001 RECT 1A 50PIV	480001	D1
Transistor	MPS-A05 NPN 60V	480052	Q2
Transistor	MPS-A55 PNP 60V	480050	Q1

Miscellaneous

Device	Description	Part #	Designator
Connector	db-15fRT ANG PC MTG	210187	J1
Relay	SPDT 24V MINI PC RELAY	450004	J1
Transformer	AUDIO, 600CT/600CT	560018	K1 K2

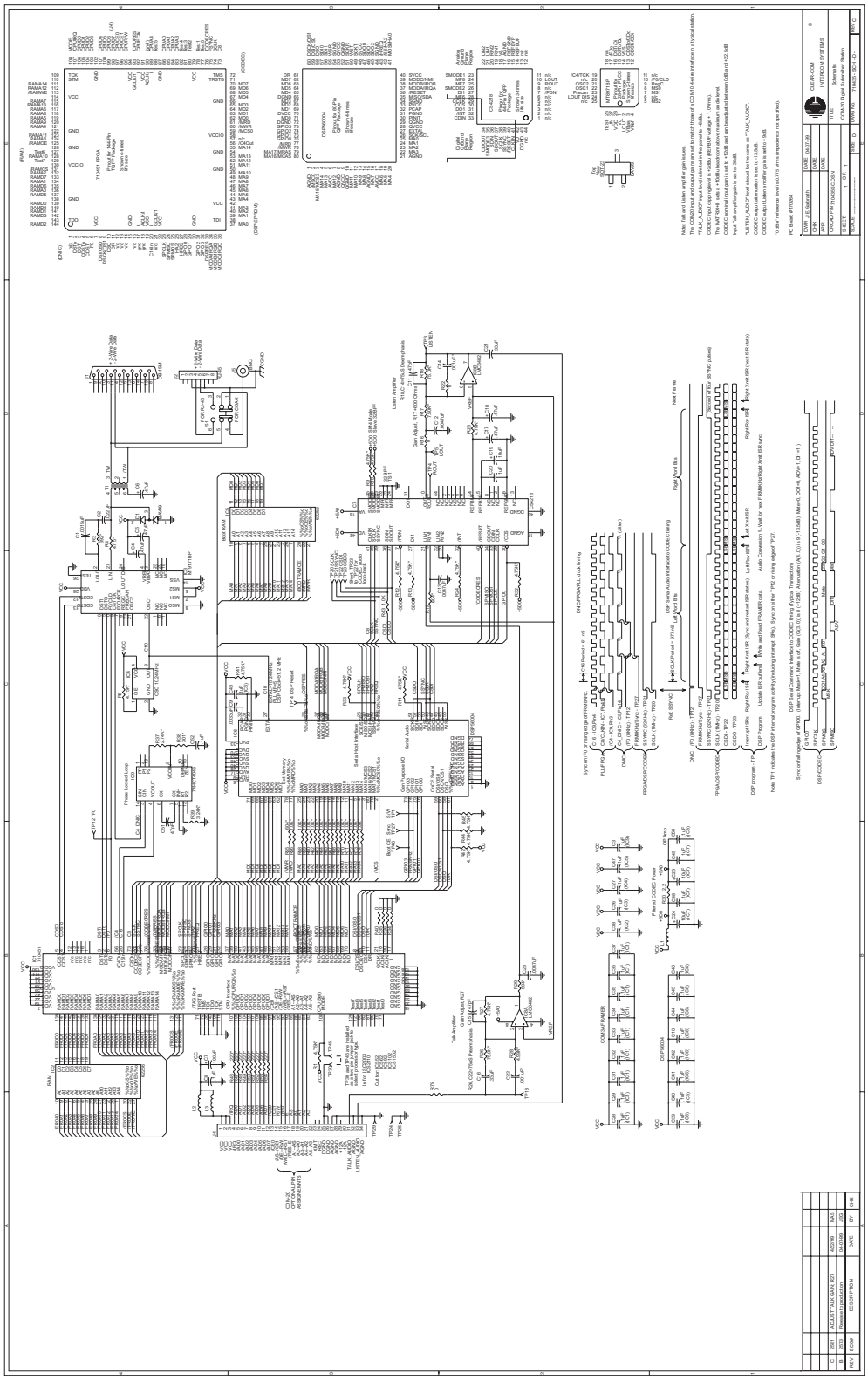

Figure 3-20: Schematic—COM-20 Communication PCB Rev. C

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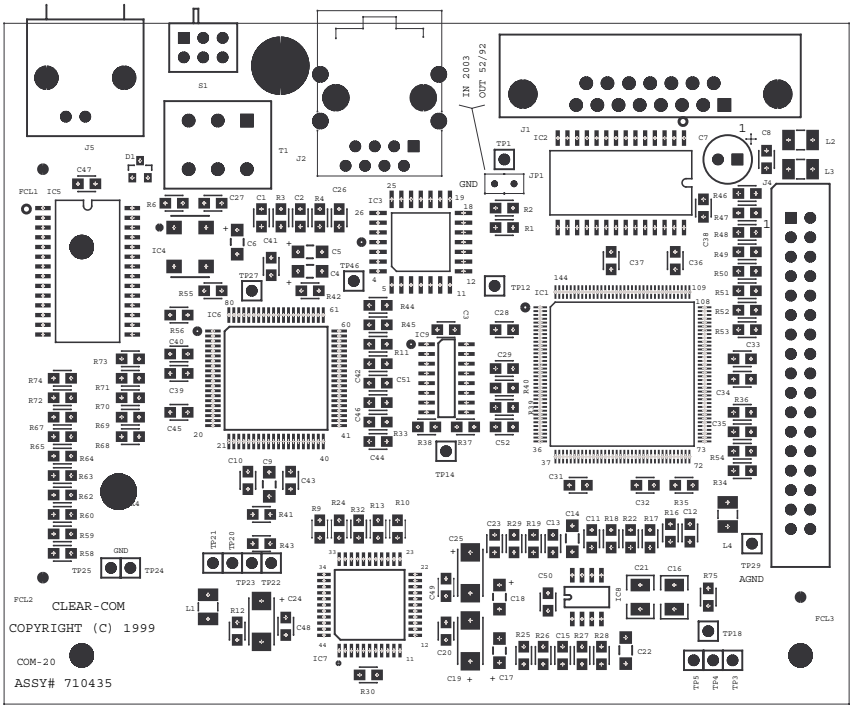

Figure 3-21: Assembly Drawing—COM-20 Communication PCB Rev. C

BILL OF MATERIALS FOR COM-20 COMMUNICATION PCB

Capacitors

Value	Type	Volts	Tol.	Part #	Designator
0.001µF	Ceramic Disc SMD	50V	1%	151001	C14 C22
0.0033µF	Ceramic Disc SMD	50V	5%	151002	C9
47pF	Ceramic Disc SMD	50V	5%	151120	C11 C15 C51
0.0015µF	Ceramic Disc SMD	50V	5%	151138	C1
0.0047µF	Ceramic Disc SMD	50V	10%	151156	C12 C13 C23
0.022µF	Ceramic Disc SMD	50V	10%	151164	C2

Value	Type	Volts	Tol.	Part #	Designator
0.1µF	Ceramic Disc SMD	50V	10%	151172	C3 C8 C10 C20 C26 C27 C28 C29 C31 C32 C33 C34 C35 C36 C37 C38 C39 C40 C41 C42 C43 C44 C45 C46 C47 C48 C49 C50 C52
0.33µF	Ceramic Disc SMD	25V	10%	151178	C16 C21
0.47µF	Tantalum SMD	35V	10%	151184	C4 C5 C6 C17 C18
10µF	Tantalum SMD	25V	10%	151192	C19 C24 C25
100µF	Aluminum	16V	20%	150155	C7

Resistors

Value	Power	Type	Tol.	Part #	Designator
0 Ω	1/10	SMD		411100	R16 R22 R34 R35 R36 R40 R75
2.2 Ω	1/10	SMD	5%	411181	R30
47.5 Ω	1/10	SMD	1%	411262	R4
221 Ω	1/10	SMD	1%	411326	R46 R47 R48 R49 R50 R51 R52 R53 R54
301 Ω	1/10	SMD	1%	411339	R38
392 Ω	1/10	SMD	1%	411350	R3
604 Ω	1/10	SMD	1%	411368	R29 R19 R55

Value	Power	Type	Tol.	Part #	Designator
1.00kΩ	1/10	SMD	1%	411389	R43 56 R58 R59 R60 R62 R63R64 R65 R67 R68 R70 R71 R72 R73 R74 R69
2.74kΩ	1/10	SMD	1%	411431	R37
3.24kΩ	1/10	SMD	1%	411438	R39
4.75kΩ	1/10	SMD	1%	411454	R1 R6 R9 R10 R11 R12 R13 R24 R25 R32
4.75kΩ	1/10	SMD	1%	411454	R33 R41 R42 R44 R45 R27
4.99kΩ	1/10	SMD	1%	411456	R28
7.50kΩ	1/10	SMD	1%	411473	R17
75.0kΩ	1/10	SMD	1%	411569	R26 R18

Diodes and Transistors

Device	Description	Part #	Designator
Diode	BAV99 DUAL DIODE... SMD	481033	D1

Integrated Circuits

Device	Description	Part #	Designator
62256	CMOS SRAM 32K X 8	481047	IC2 IC5
6482	DUAL CMOS OPAMP RAIL/RAIL	481022	IC8
0.24MHZ	CRYSTAL CLOCK OSCILLATOR	231004	IC4
4218	16-BIT 2 CHANNEL CODEC	481041	IC7
74HCT4046A	CMOS PHASE LOCK LOOP...SOIC16	481045	IC9

Device	Description	Part #	Designator
MT9171AP	DIGITAL NETWORK INT	481046	IC3
56004	24-BIT DSP 40MHZ	481071	IC6
IFPGA	DNIC FRAMER, COM 20	710451	IC1

Miscellaneous

Device	Description	Part #	Designator
Connector	JUMP JAX	210103	JP1
Connector	HEADER MULTI PIN HEADER((PER)PIN)	210112	JP1(2)
Connector	15 PIN (M) RT ANG PC MTG D TYPE CON	210188	J1
Connector	DUAL ROW HEADER 17 POS. .230IN	210279	J4
Connector	RJ-45 RT ANG MOD CON 1-PORT SHIELDED	210335	J2
Connector	BNC RT ANGLE PC MNT W/THREAD BUSH	210354	J5
Inductor	FERRITE EMI SUP-PRESSOR 400MA	181001	L1 L2 L3
Switch	DPDT MICRO-SUBMIN-IATURE SWITCH	510124	S1
Transformer	2745B 2:1 PULSE TRANSFORMER	560023	T1

4 SPECIFICATIONS

Note: 0 dBu is referenced to 0.775 V RMS

FRONT-PANEL CONTROLS AND CONNECTORS

Talk/Listen Switches:	12
Function Buttons	16
Answer Back Switch	1
Volume Controls	2
Headset Connector	1 D4M XLR
Panel Mic Connector	1 1/4 in. Phone Jack

REAR-PANEL CONNECTORS

Miscellaneous	DB-15F
To Matrix	RJ-45 & DB-15M
Audio IO (OPT-100)	DB-15F
Accessory	DB-9F
DC Power	5 Pin

PANEL MICROPHONE INPUT

Type:	Electret
Input Level	40 dBu
Gain Adjustment Range	+/-5dB
Impedance	200 Ohms

HEADSET MICROPHONE INPUT

Type	Dynamic
Input Level	-55dBu
Gain Adjustment Range	+/- 5dB
Impedance	200 Ohms

LOCAL PROGRAM INPUT

Type	Transformer Isolated
Impedance	8k Ohms Bridging
Level	0 dBu will produce full output of speaker when volume control is fully clockwise

HEADPHONE OUTPUTS

Impedance	50 to 600 Ohms
Power	1/2 W into 50 Ohms

SPEAKER AMPLIFIER OUTPUT

Impedance	8 Ohms
Power	2 W

LINE INPUT (2-PAIR LISTEN FROM MATRIX)

Type	Transformer Balanced
Impedance	8k Ohms Bridging
Level	0 dBu nominal
Freq. Resp.	100 Hz to 15 kHz +/- 2 dB

LINE OUTPUT (2-PAIR TALK TO MATRIX)

Type	Transformer Balanced
Impedance	150 Ohms (when talk active)
Level	0 dBu nominal
Freq. Resp.	100 Hz to 15 kHz, +/- 2 dB

LOGIC INPUT #1

Type	5 V logic with pull-up resistor
Logic	True = Short to Ground

LOGIC INPUT #2

Type	5 V logic with pull-up resistor
Logic	True = Short to Ground

MUTE RELAY

Contact Type	1 pair SPDT (single form C)
Contact Voltage Rating	24 VDC
Contact Current Rating	1 Amp continuous, 2 Amps peak at 24 VDC

PANEL RELAY

Contact Type	1 pair SPDT (single form C)
Contact Voltage Rating	24 VDC
Contact Current Rating	1 Amp continuous, 2 Amps peak at 24 VDC

AC MAINS POWER

Voltage	117 VAC nominal (105 to 130 VAC)
Or	220 VAC nominal (200 to 240 VAC)
AC Current	0.2 Amp at 117 VAC 0.1 Amp at 220 VAC
Frequency	45 to 65 Hz

TEMPERATURE

Operating	between 0 and 50 C (32 to 125 F)
Storage	between 0 and 70 C (32 to 150 F)

HUMIDITY

Operation and Storage	Between 20% and 90%, Non-Condensing

PACKAGE DIMENSIONS

Height	3.5 in. (8.89 cm), (2 RU, EIA rack)
Width	19.0 in. (48.26 cm)
Depth	6.75 in. (17.15 cm)
Weight	7.5 lbs. (4.0 kg)

OPT-100 AUXILIARY AUDIO I/O OPTION

AUDIO

Output Signal Levels	0.0 dBu nominal
Impedance	600 Ohms, transformer balanced
Frequency Response	100 Hz to 10 kHz, +/- 2 dB of microphone preamp or external program input
Distortion	Less than 0.5% THD

SA RELAY

Contact Type	1 pair SPDT (single form C)
Contact Voltage Rating	24 VDC
Contact Current Rating	1 Amp continuous, 2 Amps peak at 24 VDC

Notice About Specifications

While Vitec Group Communications makes every attempt to maintain the accuracy of the information contained in its product manuals, that information is subject to change without notice. Performance specifications included in this manual are design-center specifications and are included for customer guidance and to facilitate system installation. Actual operating performance may vary.

5 GLOSSARY

Analog Port Any of the Eclipse matrix's analog input/output RJ-45 connectors that are used to connect cable from the matrix to panels and interfaces. Each "port" connects to a separate audio channel in the matrix intercom system.

Bus A bus is the channel or path between the components in the matrix along which electrical signals flow to carry information from one component to the next. In the Eclipse matrix the bus is located in the etched surface of the midplane.

Call Signal A call signal is an electronic signal sent from one panel or interface to another. A call signal can be audible and/or visual. Typically a call signal is sent to get the attention of a panel operator who may have turned down their intercom speaker's volume or removed their headset. It can also be sent to activate an electronic relay.

Category-5 cable EIA/TIA 568 category specification relating to network cabling. Shielded category-5 cabling is required for Eclipse matrix wiring.

CellCom Digital wireless communications product. Sold under the CellCom name in USA and as FreeSpeak in Europe and Asia.

Central Matrix The term "central matrix" is used to differentiate the central hardware and software of the intercom system from the connected audio devices. The central matrix consists of:

1. The metal housing for the circuit cards and power supplies.
2. The circuit cards.
3. The power supplies.
4. The rear panel connectors which connect the matrix's hardware to panels and interfaces.

Destination A device such as an intercom panel, beltpack, or interface to which audio signals are sent. The device from which audio signals are sent is called a "source".

Duplex All real-time communication between individuals talking face to face is full duplex, meaning that they can both talk and listen simultaneously. The Eclipse matrices provide full-duplex audio.

ECS Eclipse Configuration System. Software program that guides the operation of the central matrix circuit cards and connected panels.

EMS Element Management System. Software program that is used to manage the Concert server system resources.

Ethernet International standard which describes how information is transmitted across a network. Provides for the efficient organization of network components.

Fiber-optic Cable A fiber-optic cable consists of a glass core covered with a reflective material called “cladding” and several layers of buffer coating to protect the cable from the environment. A laser sends light pulses through the glass core to the other end of the cable.

FreeSpeak Digital wireless communications product. Sold under the FreeSpeak name in Europe and Asia and CellCom in USA.

Full Duplex Refers to transmission of signals in two directions simultaneously.

IFB “Interruptible Foldback”. The term “foldback” refers to sending “program” audio, or some other audio mix, back to announcers while they are on the air. Doing so allows announcers to monitor themselves, other announcers, videotapes of commercials, or some mix of sources, while they on the air. This is typically found in television news and live broadcast events.

Announcers typically wear a small ear piece so they can hear the selected foldback audio mix. When a director wants to give directions to an announcer on air, or to announce changes in the program, the director must “interrupt” the foldback. To do this, the director uses a channel specifically set up to interrupt the foldback audio.

Interface Module A piece of electronic hardware designed to convert the 4-wire signals of a central matrix port to some other form of communication, such as 2-wire party line, telephone, etc. The interface module is connected to a central matrix port. The external non-4-wire device is then connected to the interface module.

ISO The ISO function, short for “panel ISOlation”, allows a panel operator to call a destination and interrupt all of that destination’s other audio paths and establish a private conversation. When the call is completed the destination’s audio pathways are restored to their original state before the interruption.

IV-R Instant Voice Router. Software that routes digital audio data between Concert users and between Concert users and Eclipse systems.

Label A label is an alphanumeric name of up to five characters that identifies a source, destination, or control function accessed by an intercom panel. Labels appear in the displays of the intercom panel. Labels can identify panels, ports interfaced to other external equipment, fixed groups, party lines, and special control functions.

Mode A term used to describe a light path through a fiber as in multimode or single mode.

Multimode Fiber-optic Cable The glass core of a multimode fiber is larger than the core of a single mode fiber, which causes the transmitted light beam to disperse as it travels through the core. Single mode fiber, with its smaller core, concentrates the light beam so that it carries signals further. Multimode fiber was the first type of fiber offered

by manufacturers. Single-mode fiber evolved as production methods improved.

Multiplexing The process by which two or more signals are transmitted over a single communications channel. Examples include time division and wavelength division multiplexing.

Nanometer (nm) Common unit of measure for wavelength. One billionth of a meter.

Non-volatile Memory Data stored in the CPU's firmware (ROM) that is not lost when the power is turned off.

Optical Signal A laser at one end of a fiber-optic cable pulses on or off to send a light signal through the glass core of the cable to the other end of the cable. Because the light signals are binary (on or off), the signal is digital.

Panel Also referred to as "station" in some cases (usually older manuals). Any intelligent intercom device connected to the rear-panel analog ports of the central matrix. This term does not refer to devices connected through interface modules.

Port Any of the input/output connections (RJ-45 connectors) on the back panel of the central matrix. These connectors and the attached cables connect the central matrix to remote intercom devices. The term "port" emphasizes that the connection is a "portal" between the central matrix and the remote intercom devices.

Program Any separate audio source that is fed into the intercom channels. In television applications, for example, "program" audio is the audio that is broadcast on air.

Rack Unit or RU Standardized unit of mounting space on a rack panel. Each rack unit is 1.75 inches (44.45 mm) of vertical mounting space. Therefore 1 RU is 1.75 inches (44.45 mm) of vertical mounting space, 2 RU is 3.5 inches (88.9 mm), 3 RU is 5.25 inches (133.35 mm), and so on.

Remote Panel Any intelligent intercom device connected to the back-panel ports of the central matrix. This term does not refer to devices connected through interfaces.

Sidetone The sound of the panel operator's own voice heard in their own earphone as they speak.

Single-mode Fiber-optic Cable The glass core of a single-mode fiber is smaller in diameter than the core of a multimode fiber, so that the light signal transmitted over the core is more concentrated than with multimode fiber, which allows the signal to travel further. Single-mode fiber evolved from multimode fiber as production methods improved.

Source In this manual, the term "source" refers to a device—such as an intercom panel, interface, or beltpack —that sends audio into the matrix. The device to which audio is sent is called a "destination".

VOX In the Eclipse system, when audio at a panel exceeds a threshold, a light switches on at the panel's port card to visually cue the operator. The threshold level is set in the Eclipse Configuration Software.

V-Series Communications panels used with Eclipse systems providing advanced facilities. Available in rack mount and desktop formats.

Wavelength-division Multiplexing (WDM) A method of multiplexing optical signals developed for use on fiber-optic cable. Each signal is assigned a particular wavelength on the light spectrum and therefore many signals can be transmitted simultaneously without interfering with each other.

ECLIPSE MANUALS

The following manuals are available covering Eclipse products and accessories.

SOFTWARE MANUALS

Eclipse Configuration System (ECS) Instruction Manual - 810299Z

Eclipse Logic Maestro Instruction Manual - 810414Z

Eclipse Production Maestro Quick Start Guide - 810409Z

Eclipse Production Maestro Installation and User Guide - 810410Z

Eclipse DECTSync Manual - 810412Z

Eclipse Host Computer Interface (HCI) Manual - 810413Z

HARDWARE MANUALS

Eclipse Omega Matrix Instruction Manual - 810290Z

Eclipse Median Matrix Instruction Manual - 810347Z

Eclipse PiCo Matrix Instruction Manual - 810348Z

Eclipse-32 Matrix Instruction Manual - 810315Z

Eclipse Matrix Installation Manual - 810298Z

Eclipse Upgrade Reference Manual - 810377Z

Eclipse V-Series Panels User Manual - 810365Z

Eclipse FOR-22 4-Wire Interface Instruction Manual - 810306Z

Eclipse CCI-22 Party Line Interface Instruction Manual - 810307Z

Eclipse TEL-14 Telephone Interface Instruction Manual - 810308Z

Eclipse GPI-6 General Purpose Inputs Instruction Manual - 810309Z

Eclipse RLY-6 General Purpose Outputs Instruction Manual - 810310Z

DIG-2 Digital Interface Instruction Manual - 810311Z

IMF-3, IMF-102, DIF-102 Interface Module Frame Instruction Manual - 810313Z

Eclipse AES-6 Digital Interface Instruction Manual - 810383Z

Eclipse BAL-8 Isolation Interface Instruction Manual - 810403Z

Eclipse V-Series AES-3 Option Card Installation Instructions - 810388Z

Eclipse V-Series XLR-7M Upgrade Instructions - 810405Z

Eclipse V-Series T-Adapter Installation Instructions - 810406Z

Eclipse FIM-202D Fiber Interface Instruction Manual - 810385Z

Eclipse FIM-102 Fiber Interface Instruction Manual - 810319Z

Eclipse FIM-108 Fiber Interface Instruction Manual - 810291Z

Eclipse IFB-104 Interface Instruction Manual - 810268Z

Eclipse 4000 Series II Panels Installation Guide - STA0530Z

Eclipse 4000 Series II Panels User Guide - STA0531Z

Eclipse ICS 1008E/1016E Panels Instruction Manual - 810404Z

Eclipse ICS 102/62 Panels Instruction Manual - 810302Z

Eclipse ICS 2003 Panel Instruction Manual 810303Z

Eclipse ICS 92/52 Panels Instruction Manual - 810301Z

Eclipse i-Station Instruction Manual - 810305Z

Eclipse ICS-21 Speaker Panel Instruction Manual - 810263Z

Eclipse ICS-22 Speaker Panel Instruction Manual - 810264Z

Eclipse ICS-24 Headset Panel Instruction Manual - 810265Z

Eclipse Digital Wireless Beltpack Instruction Manual - 810376Z

LIMITED WARRANTY

This document details the Clear-Com Standard Limited Warranty for all new products for sale within all regions with the exception of Military, Aerospace, and Government (MAG).

EXCEPT AS SET FORTH HEREIN ("LIMITED WARRANTY"), CLEAR-COM MAKES NO OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, NONINFRINGEMENT OF THIRD PARTY RIGHTS, OR FITNESS FOR A PARTICULAR PURPOSE, ALL OF WHICH ARE EXPRESSLY DISCLAIMED.

1. **Standard Limited Warranty.** Clear-Com Communication Systems ("Clear-Com") warrants its products, including supplied accessories, against defects in material or workmanship for the time periods as set forth below provided it was purchased from an authorized Clear-Com dealer or distributor.

   a) Pursuant to this Limited Warranty, Clear-Com will, at its option:

      i) repair the product using new or refurbished parts, or;

      ii) replace the product with a new or refurbished product.

   b) Remedies: In the event of a defect, the rights detailed in 1 (a) are your exclusive remedies. For purposes of this Limited Warranty, "refurbished" means a product or part that has been returned to its original specifications.

   c) Standard Warranty Period (by Product):

      i) All Clear-Com brand systems and products, including belt packs, have a Limited Warranty of two years, with the exception of;

         (1) Cables, accessories, components & consumable items have a Limited Warranty of 90 days.

         (2) Any Clear-Com product that has been classified as obsolete at the time of sale has a Limited Warranty of 90 days from sales and will be replaced with the same product or a sales credit will be issued, at the sole discretion of Clear-Com.

         (3) Headsets, handsets, microphones, and associated spare parts, as well as UHF wireless IFB products, have a Limited Warranty of one year.

         (4) UHF WBS Analog wireless intercom systems have a Limited Warranty of three years.

(5) All software products, including Concert (Client and Server), ECS, Production Maestro and Logic Maestro are warranted for one year and shall substantially conform to published specifications. The media on which the Software is furnished is warranted to be free of defects in material and workmanship (under normal use) for a period of one year.

(6) Any Clear-Com products that are listed within the last time buy period have the same Limited Warranty for their type 1.i 1 - 1.i.5 as above.

d) Any Clear-Com product that is repaired or supplied as a replacement under the terms of this Limited Warranty shall inherit the remaining warranty period from the original product.

e) Standard Warranty Period Start Date

i) Dealer / Distributor Sales: In view of Dealer or Distributor stocking practices, the Standard Warranty Period for products sold through Dealers or Distributors will commence from the Clear-Com invoice date and will include an automatic extension of three months. Any valid warranty claim within the Standard Warranty Period as determined by the Clear-Com invoice date will be covered without further supporting evidence. All warranty claims after this date must be supported by the Customer's proof of purchase that demonstrates the product is still within the Standard Warranty Period (as detailed in Section 1.c.i above, plus the automatic three month extension) from their purchase date.

ii) Direct Sales: The Standard Warranty Period will commence from the date the product was shipped from Clear-Com to the Customer. The Standard Warranty Period start date for contracts that include commissioning will be the date of the Site Acceptance Test (SAT) or one month from conclusion of the commissioning project, whichever is earlier.

f) Invalidation of Warranty

i) This Limited Warranty shall be invalidated if the product's outer case has been opened and internal modifications have been made or damage has occurred, or upon the occurrence of other damage or failure not attributable to normal wear and tear. Authorized modifications with Clear-Com's express written permission will not invalidate the warranty.

g) Software Updates

i) Software Updates are released periodically to correct discovered program bugs. During the Warranty Period, software updates are available to Customers free of charge.

h) Software Upgrades

i) Software Upgrades include new Features and/or Functional Enhancements and are not included as part of the Standard Warranty but may be purchased at the published rates.

ii) Note: In the absence of a Software Update containing a program correction and no available workaround to mitigate the problem, at the discretion of Service, Sales, Engineering, or Product Management, the Customer may be provided a Software Upgrade under warranty.

2. **Exclusions.** Services do not cover damage or failure caused by any occurrence beyond Clear-Com's reasonable control, including without limitation acts of God, fire, flooding, earthquake, lightning, failure of electric power or air conditioning, neglect, misuse, improper operation, war, government regulations, supply shortages, riots, sabotage, terrorism, unauthorized modifications or repair, strikes, labor disputes or any product failure that Clear-Com determines is not a result of failure in the Services provided by Clear-Com. Further Services excluded from this Agreement include: services required due to errors or omissions in Customer purchase orders; installation or maintenance of wiring, circuits, electrical conduits or devices external to the products; replacement or reconditioning of products which, in Clear-Com's opinion cannot be reliably maintained or properly serviced due to excessive wear or deterioration; Customer's failure to maintain the installation site in accordance with the environmental specifications of the products; or service on products removed from the location originally specified by Customer and/or reinstalled without the prior written approval of Clear-Com. Customer will pay Clear-Com's then current published charges to restore such Covered Products to a condition eligible for further service under this Agreement. Clear-Com shall be excused from and shall not be liable for any failure or delay in performance under this Agreement due to the foregoing or any causes beyond its reasonable control.

3. **Limitation of Liability. IN NO EVENT WILL CLEAR-COM BE LIABLE UNDER THIS AGREEMENT FOR ANY INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING WITHOUT LIMITATION LOST PROFITS), REGARDLESS OF THE FORM OF ACTION, EVEN IF ADVISED IN ADVANCE OF THE POSSIBILITY OF SUCH DAMAGES.**

4. **Assignment.** Neither party may assign this Agreement or any portion thereof without the prior written consent of the other, except in the event of a merger, sale of all or substantially all of the assets or other corporate reorganization.

5. **Ownership of replaced parts or product.** All replaced parts or products become the property of Clear-Com.

6. **Entire Agreement.** This Agreement constitutes the entire agreement between the parties with respect to the subject matter hereof, and supersedes all prior or contemporaneous proposals, oral or written, and all other communications between them relating to the subject matter of this Agreement.

TECHNICAL SUPPORT & REPAIR POLICY

NOVEMBER 1, 2008

In order to ensure that your experience with Clear-Com and our World Class products is as beneficial, effective and efficient as possible, we would like to define the policies and share some "best practices" that can accelerate any problem solving processes which we may find necessary and to enhance your customer service experience. Our Technical Support, Return Material Authorization, and Repair Policies are set forth below. These Policies are subject to revision and constantly evolve in order to address our Customers' and the Market's needs. Accordingly these are provided by way of guidance and for information only and may be changed at anytime with or without Notice.

TECHNICAL SUPPORT POLICY

a) Telephone, online, and e-mail technical support will be provided by the Customer Service Center free of charge during the Warranty Period.

b) Technical support will be provided free of charge for all software products under the following conditions:

i) The application, operating, and embedded software is installed on a product covered by Clear-Com's Limited Warranty, and:

(1) The software is at the current release level; or,

(2) The software is one (1) version removed from current.

ii) Older versions of software will receive "best-effort" support, but will not be updated to correct reported bugs or add requested functionality.

c) For Technical Support:

i) North and South America, (inc. Canada, Mexico, and the Caribbean) & US Military:

Hours:	0800 - 1700 Pacific Time
Days:	Monday - Friday
Tel:	+1 510 337 6600
Email:	CustomerServicesUS@vitecgroup.com

ii) Europe, the Middle East and Africa:

Hours:	0800 - midnight Central European Time

Days: Monday - Friday
Tel: +49 40 853 999 700
Email: TechnicalSupportEMEA@vitecgroup.com

iii) Asia-Pacific:
Hours: 0800 - 1700 Pacific Time
Days: Monday - Friday
Tel: +1 510 337 6600
Email: CustomerServicesAPAC@vitecgroup.com

d) Email Technical Support is available for all Clear-Com branded products free of charge for the life of the product, or two years after a product has been classified as obsolete, whichever comes first.

e) Support for Distributor and Dealer Sales

i) Distributors and Dealers may utilize the Customer Service Centers once a system has been installed and commissioned. Clear-Com Systems and Applications Engineers will provide support to the Distributor from the pre-sales stage through to satisfactory installation for new system purchases. Customers will be encouraged to contact their Dealer or Distributor with their installation and technical support enquires rather than using the Customer Service Centers directly.

f) Support for Direct Sales

i) Customers may utilize the Customer Service Centers once a system has been installed and commissioned by Clear-Com Systems and Applications Engineers, or in the case of project installations, once the Project Team has completed the hand-over to the Support Centers.

RETURN MATERIAL AUTHORIZATION POLICY

a) Authorizations: All products returned to Clear-Com or a Clear-Com Authorized Service Partner must be identified by a Return Material Authorization (RMA) number.

b) The Customer will be provided with an RMA number upon contacting Clear-Com Sales Support as instructed below.

c) The RMA number must be obtained from Clear-Com via phone or email prior to returning product to the Service Center. Product received by the Service Center without a proper RMA number is subject to return to the Customer at the Customer's expense.

d) Damaged equipment will be repaired at the Customer's expense.

e) Returns are subject to a 15% restocking fee.

f) Advance Warranty Replacements (AWRs);

i) *During the first 30 days of the Standard Warranty Period:* Once the equipment fault has been verified by Clear-Com or its authorized representative, Clear-Com will ship a new replacement product. The Customer will be provided with an RMA number and be required to return the faulty equipment within 14 days of receipt of the replacement or will be invoiced for the list price of a new product.

ii) *During days 31-90 of the Standard Warranty Period:* Once the equipment fault has been verified by Clear-Com or its authorized representative, Clear-Com will ship a like-new, fully refurbished replacement product. The Customer will be provided with an RMA number and be required to return the faulty equipment within 14 days of receipt of the replacement or will be invoiced for the list price of a new product.

iii) To obtain an RMA number or request an AWR:

(1) North and South America, Asia-Pacific, and US Military:

Hours:	0800 - 1700 Pacific Time
Days:	Monday - Friday
Tel:	+1 510 337 6600
Email:	SalesSupportUS@vitecgroup.com

(2) Europe, the Middle East and Africa:

Hours:	0800 - 1700 GMT + 1
Days:	Monday - Friday
Tel:	+ 44 1223 815000
Email:	SalesSupportEMEA@vitecgroup.com

iv) Note: AWRs are not available for UHF WBS Analog wireless intercom systems. UHF WBS Analog wireless intercom systems out-of-box failures must be returned to Alameda for repair.

v) Note: Out-of-box failures returned after 90 days will be repaired and not replaced unless approved by Clear-Com Management.

vi) Note: AWRs are not available after 90 days of receipt of product unless an AWR Warranty Extension is purchased at the time of product purchase.

vii) Note: Shipping charges, including duties, taxes, and insurance (optional), to Clear-Com's factory is the responsibility of the Customer. Shipping AWRs from Clear-Com is at Clear-Com's expense (normal ground or international economy delivery). Requests for expedited shipping (E.g. "Next-Day Air") and insurance are the responsibility of the Customer.

REPAIR POLICY

a) Repair Authorizations: All products sent to Clear-Com or a Clear-Com Authorized Service Partner for repair must be identified by a Repair Authorization (RA) number (see above).

b) The Customer will be provided with an RA number upon contacting Clear-Com Customer Services as instructed below.

c) The RA number must be obtained from Clear-Com via phone or email prior to returning product to the Service Center. Product received by the Service Center without a proper RA number is subject to return to the Customer at the Customer's expense.

d) Return for Repair

i) Customers are required to ship equipment at their own cost (including transportation, packing, transit, insurance, taxes and duties) to Clear-Com's designated location for repair.

(1) Clear-Com will pay for the equipment to be returned to the Customer when it is repaired under warranty.

(2) Shipping from Clear-Com is normal ground delivery or international economy. Requests for expedited shipping (E.g. "Next-Day Air") and insurance are the responsibility of the Customer.

ii) **Clear-Com does not provide temporary replacement equipment ("loaner") during the period the product is at the factory for repair.** Customers should consider a potential prolonged outage during the repair cycle, and if required for continuous operations purchase minimum spare equipment required or purchase an AWR Warranty Extension.

iii) No individual parts or subassemblies will be provided under warranty, and warranty repairs will be completed only by Clear-Com or its Authorized Service Partners.

iv) Customers requesting a non-warranty repair will be provided an estimate of the total repair cost prior to the return of the equipment. In the event that Clear-Com is unable to estimate

the cost of repair, the Customer may elect to return the product to the factory for an estimate. The Customer is responsible for shipping costs both to and from the factory in the event they choose not to accept the estimate.

v) The Customer must provide either a purchase order for the repair work, or will be required to make an advance payment (as a debit against the Dealer's line of credit, or credit card) prior to the repaired product being returned to the Customer.

vi) For requesting a Repair Authorization number:

(1) North and South America, Asia-Pacific, and US Military:

Hours:	0800 - 1700 Pacific Time
Days:	Monday - Friday
Tel:	+1 510 337 6600
Email:	CustomerServicesUS@vitecgroup.com

(2) Europe, the Middle East and Africa:

Hours:	0800 - midnight Central European Time
Days:	Monday - Friday
Tel:	+49 40 853 999 700
Email:	TechnicalSupportEMEA@vitecgroup.com

vii) Note: Clear-Com's Limited Warranty does not cover normal wear and tear. The Customer will be charged the full cost of the repair if their equipment has been tampered with by non-approved personnel, or has been subject to damage through electrical failure, liquid damage or mishandling. The Customer Service Center will provide the Customer with a cost estimate for any such repairs prior to undertaking the work.